TELEPHONE and Management ENGINEER

SEPTEMBER
1954

V58 #9

THE NATIONAL TELEPHONE MAGAZINE

Featuring in This Issue—

- ★ MANAGEMENT DEVELOPMENT, *by E. S. Germain*
- ★ NOTES FROM A SUPERVISOR'S NOTEBOOK, *by Ruth Richards*
- ★ DESIGNING MODERN COMMUNICATION LINES, *by J. N. Petrie*
- ★ REDUCING ACCIDENT COSTS THROUGH SAFE WORK METHODS
- ★ MEASURING CABLE & WIRE CLEARANCES, *by John S. Reed*

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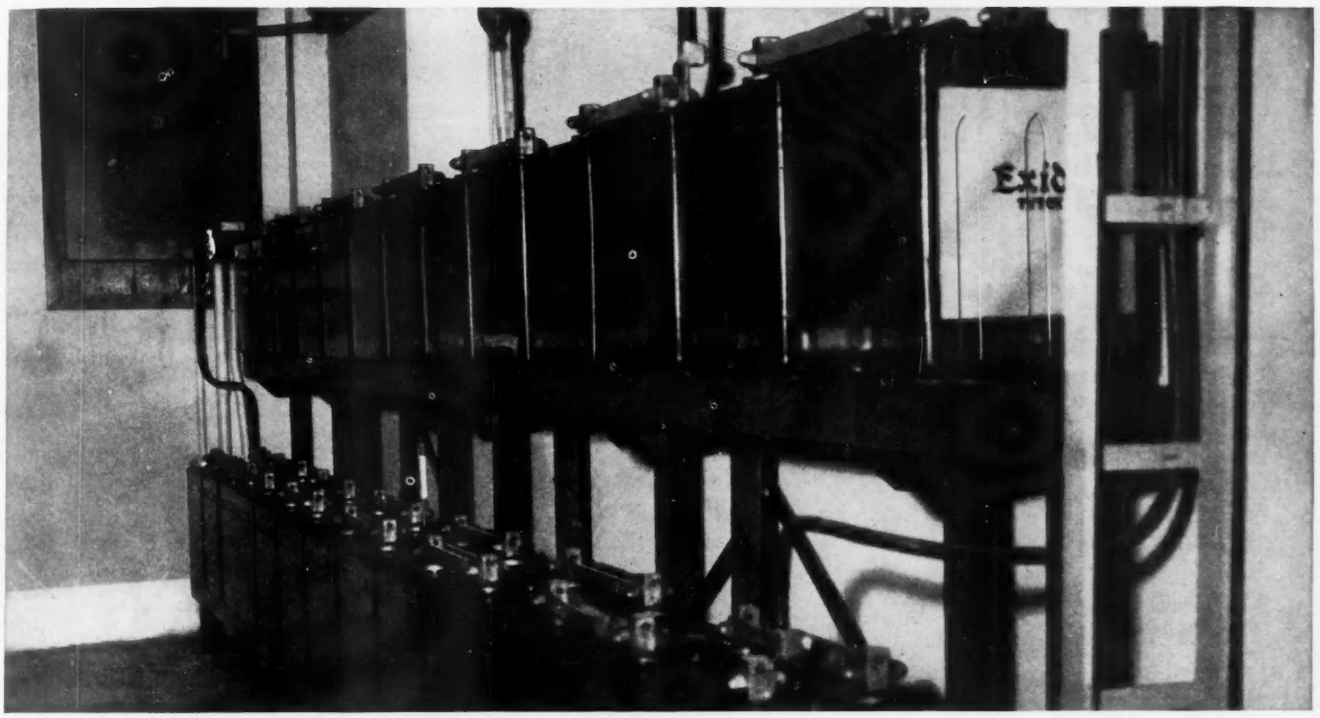
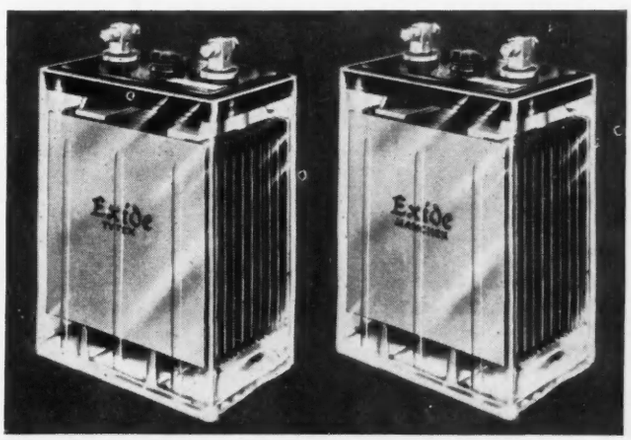


A TYPICAL INSTALLATION of Exide-Tytex batteries at the Stephenville, Tex., Exchange of the Gulf States Telephone Company. Used is a 26 cell type EOE-29 battery, mounted on a 2-step rack. Exide telephone batteries give a dependable source of power . . . assuring positive operation of equipment. They maintain an adequate reserve of power for emergencies beyond normal needs. Also, their compact design puts more power in less floor space. For new installations, or to modernize existing facilities, plan now on using Exide telephone batteries!

MODERN inside and out is this Gulf States central office. Equipment provides for about 2400 dial stations.



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TELEPHONE and Management ENGINEER

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ARTICLES

Editorial — "Don't Sell The Future of Independent Telephony Short" 39
The Independent telephone industry has a great future.

Meet Honourable Joseph F. Brown 29
Introducing the Chairman of the Nebraska Railway Commission.

Management Development — E. S. Germain 43
The art of getting things done through people.

Measuring Cable & Wire Clearances — John S. Reed 48
New information on a common problem.

Notes From A Supervisor's Notebook — Ruth E. Richards 52
Thoughts on service, tone of service and operator toll dialnig.

Designing Modern Communication Lines — J. N. Petrie 58
A new series of articles discussing the design of outside plant for high frequency carrier telephone system operation.

New Ideas and New Methods 68
A report from the field on new ideas at work.

Reducing Accident Costs Through Safe Work Methods 72
It is up to the employer to teach safe work methods to his employes.

Insurance For Employes — Bill Corman 76
Practical tips on selecting the right insurance program.

FEATURES

Across The Editor's Desk 6
Telephone Engineer Newsletter 9
Industry News Briefs 16
Washington Bureau Reports — Roland Davies & Fred Henck 24
Coming Conventions 57
Questions & Answers — Jay G. Mitchell 79
The Back of The Book — John G. Reynolds 118

DEPARTMENTS

Professional Cards 96
New Products' Showcase 102
Buyers' Guide 102
Classified Advertising 106
Advertisers' Index 117

FRONT COVER

Students attending recent Nebraska Telephone Association accounting school at Nebraska State Teachers College, Kearney. (See cover story on page 24.)

The National Telephone Magazine

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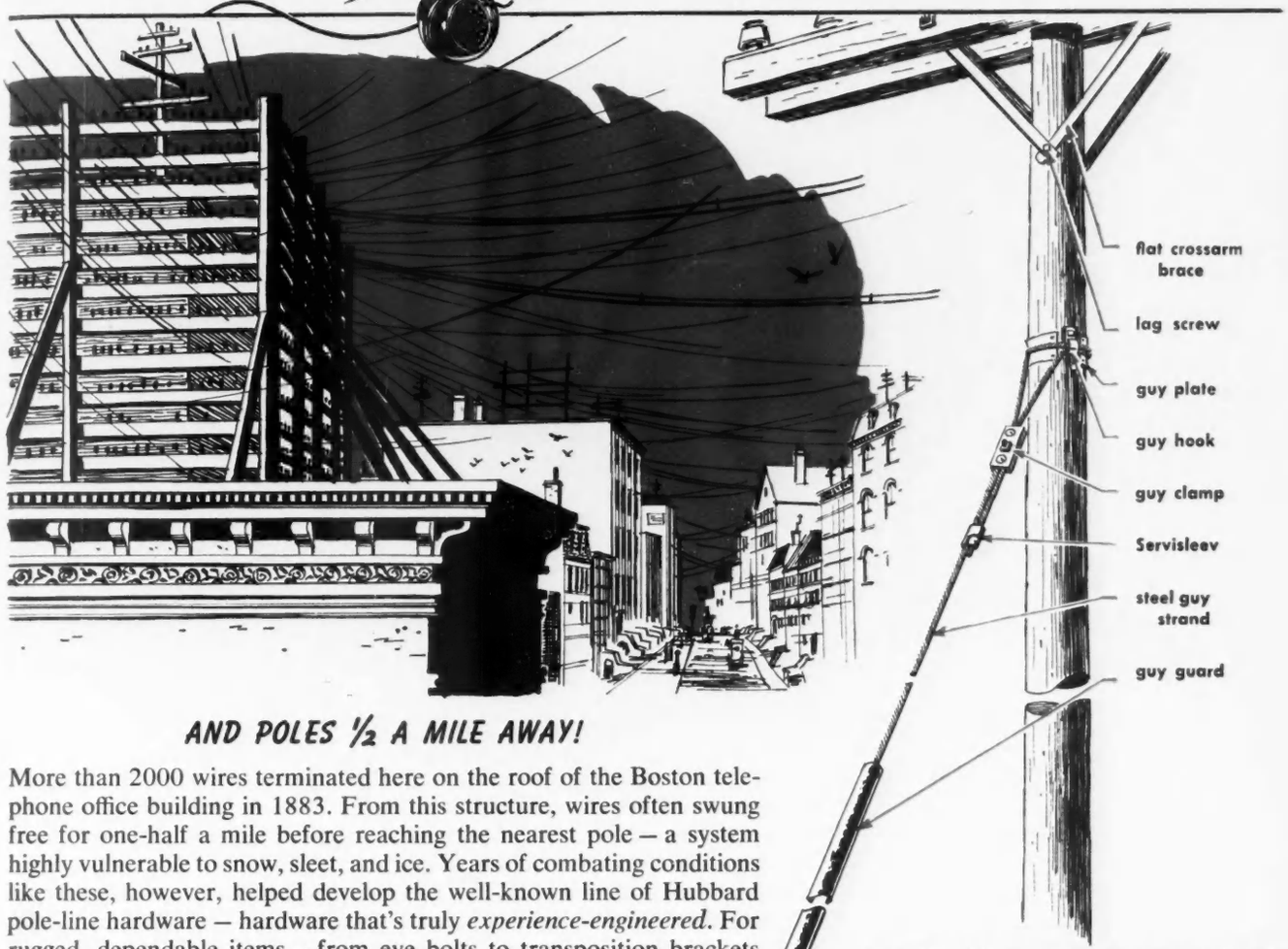
GraybaR

TELEPHONE NEWS



AND POLES ½ A MILE AWAY!

More than 2000 wires terminated here on the roof of the Boston telephone office building in 1883. From this structure, wires often swung free for one-half a mile before reaching the nearest pole – a system highly vulnerable to snow, sleet, and ice. Years of combating conditions like these, however, helped develop the well-known line of Hubbard pole-line hardware – hardware that's truly *experience-engineered*. For rugged, dependable items – from eye bolts to transposition brackets – Graybar reminds you to "hang the load on Hubbard."

SWAMP, SAND, ROCK, HARDPAN— WHAT'S THE PROBLEM IN YOUR AREA?

It really makes little difference – there's an anchor designed to do a quick, sure holding job in any soil classification. And . . . you can get the type best suited to your own local needs from one of 109 strategically located Graybar offices and warehouses across the nation.

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These are just a few of the thousands of telephone items available from Graybar. A pioneer supplier of equipment to the independent telephone industry, Graybar offers prompt service on everything from the bottom of the hole to the top of the pole.

Your local Graybar Representative is anxious to make your order his personal responsibility – be sure to make your next order read "Via Graybar."

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Across The Editor's Desk

Jim Nelson Moves

CONGRATULATIONS are due to *James L. Nelson*, until August 16 of Minneapolis and the law firm of *Nelson & Mohan*, but now of Denver, Colo. where he is associated with the firm of *Akolt, Campbell, Turnquist & Shepherd*, Telephone Bldg., Denver. Jim is well known in telephone circles and particularly in Minnesota where he represented many Independent telephone companies as their "legal eagle."

Progress at Jeff City

THE CAPITOL City Telephone Co., Jefferson City, Mo. was featured in a recent issue of BUSINESS, the official publication of the Chamber of Commerce in that city. Friends of *Foster B. McHenry* will be glad to know that his two sons have finished their Army service in Korea and are now part of the firm. Some of the figures quoted in the magazine are illuminating—local calls originated were 1,876.13 per telephone in 1953. At mid-year the company served 12,243 company-owned telephones.

Carl Spaid

FRIENDS of *Carl Spaid*, president of the Missouri Telephone Association, will be glad to hear he is convalescing nicely in Kansas City following an illness suffered in Chicago while there on business. His address is 31 W. Dartmouth, Kansas City, Mo.

Orchid for Texas

THANKS to the *Texas Telephone Association* for a good job well done on its latest release which lists Texas telephone companies and co-operative organizations together with rate schedules and numbers of telephones served. Executive Secretary *Jack* Haley and the officers of the association are to be congratulated on completion of this report which is the first authentic listing of Texas companies we have seen in many years.

Good Reading

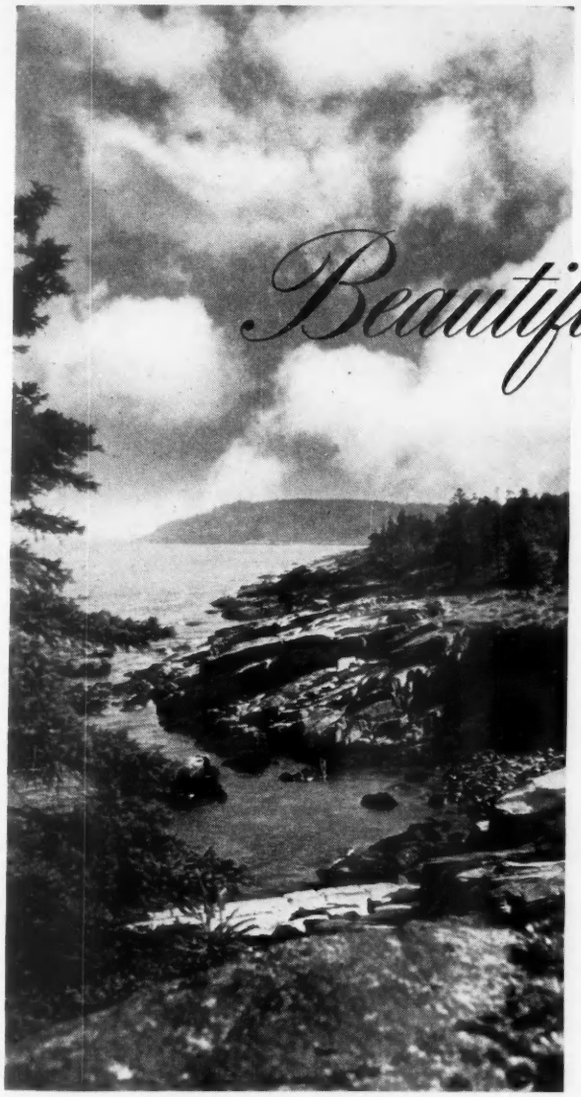
ON ANOTHER page of this issue you will notice a feature article, titled "Management Development" authored by *E. S. Germain*, director of public relations of the *California Water & Telephone Co.* The manuscript and chart should prove most interesting reading to telephone company executives as it tells what this company had done and accomplished in the training of their supervisory personnel. In our issue (October 1) we will present another feature article giving the other side of this subject from the educators standpoint. To handle this assignment we were lucky to get *Dr. Louis Hackemann* of the staff of the University of Wisconsin and principal of *Hackman & Associates, Inc.*, management specialists and specialists in industrial training, as the author. We think these two exclusive articles will point up one of the most important problems now faced by our industry.

Made Your Reservations?

HAVE YOU made your hotel reservation for the national convention of the *United States Independent Telephone Association* at the Conrad Hilton Hotel, Chicago, Oct. 11, 12 and 13? We will be reminding you of this date regularly as in the past we have found that those making early reservations always get what they desire. The tentative convention program has been announced by Executive vice president Clyde S. Bailey.

California Birthday

SEPTEMBER 1 was a big day for General Telephone Co. of California. On that day, General of California began its second quarter century of service to California homes, businesses and industries. For the past 25 years General of California has had the unusual opportunity of providing telephone service to one of the most interesting progressive and challenging areas in the United States. It has done the job well and we want to congratulate its officers for their 25-year record of filling a basic need for the many publics in General's growing communities.



Beautiful COUNTRYSIDE—

BUT *bad* FOR TELEPHONE MEN

Off-shore islands, mountain ranges, wide rivers, deep canyons — these are a part of a great national panorama that often delights us. But to telephone men they can be an expensive headache.

Now you can bridge those gaps and make those extensions on your toll routes practically and *profitably* with Lenkurt Type 45BX Carrier System for use with radio equipment such as Lenkurt Type 72B.

The 45BX can be interconnected—on an *intermediate frequency* basis—to other 45-class carrier systems, requiring only inexpensive converters. And the miniaturized plug-in components and channel units of all these 45-class systems are interchangeable—for additional economy, convenience, and flexibility.

For further information on Type 45BX carrier system for use with radio facilities, write *today* for Circular TM45BX-P8.

HELPFUL FACTS ON THE TYPE 45BX FOR THE TECHNICALLY MINDED:

- The number of channels that can be utilized depends on the modulation bandwidth of the radio system. A 48-channel system requires a spectrum of 40 to 264 kc. while a 24-channel system requires only 40 to 140 kc.
- An automatic channel regulator controls circuit net losses within less than 1 db.
- Adaptable to various signaling and dialing needs.
- Compandors are available with Type 45BX equipment for those situations where additional fade margin is indicated or other characteristics of the radio path and equipment make their use desirable.

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NEWSLETTER
TELEPHONE ENGINEER

Fortnightly TELEPHONE ENGINEER ON THE 1st OF EACH MONTH ★ TELEPHONE ENGINEER AND *Management* ON THE 15th OF EACH MONTH

Dear Sir: Sept. 15, 1954

GENERAL TELEPHONE BUYS ALPHADUCT FIRM, MAKERS OF INSULATED WIRE: – Scope of General Tel. System has been broadened still further with purchase of all outstanding stock of Alphaduct Wire & Cable Co., Milltown, N. J., it was announced this month by General Tel. Corp. Pres. Donald C. Power. Alphaduct company is engaged primarily in making insulated wire used by telephone industry.

At same time, Mr. Power announced that Edward S. George, who has been treas. of Alphaduct, has been elected pres. of firm.

General earlier entered telephone equipment manufacturing & sales field with acquisition of Leich Electric Corp. & Leich Sales Corp.

REA ALLOCATES TELEPHONE LOAN FUNDS TO TWO BORROWERS IN IOWA: – Two Rural Electrification Administration telephone loan approvals to improve & extend rural telephone service in 6 Iowa counties have gone to North Central Tel. Co., Clare, Ia., & Farmers Mutual Cooperative Tel. Co. Harlan, Ia.

North Central approval, for $407,000, affects service in Hamilton, Humboldt, Pocahontas, Webster, & Wright Counties. Company now furnishes magneto service to 906 subscribers through central offices at Clare, Duncombe, Thor & Vincent, & with REA funds, will convert system to dial operation, rebuild existing line, add some new line, initiate service to 180 rural families. When project is completed, it will be serving 1086 subscribers over 348 miles of line.

Farmers Mutual co-op, which received approval for $295,000, is presently furnishing common battery & magneto service to 1157 subscribers over 239 miles of line in Shelby County. With REA funds, co-op will rebuild existing line, add some new line, convert central offices at Irwin, Kirkman & Jacksonville to dial operation, with 4th central office at Harlan to remain under common battery operation, resulting in new or improved service to 1207 subscribers over 265 miles of line.

PURCHASE OF SMALL INDEPENDENT BY SOUTHWESTERN BELL APPROVED: –Purchase by Southwestern Bell Co. of Rogersville (Mo.) Tel. Co. for $12,500 has been approved by Missouri Public Service Commission, & company now will apply to FCC for permission. Present owners said Rogersville area is being built up faster than they can expand their system.

GARY & CO., ASSOCIATED TEL. & TEL., BOND & SHARE DECLARE DIVIDENDS: - Theodore Gary & Co. board of directors on Aug. 12, declared dividends of 40 cents per share on 1st preferred stock, & 20 cents per share on both participating common & common stock.

Associated Tel. & Tel. Co., member of Gary Group, on same date declared dividend of $1 per share on Class A stock, & same amount on common or ordinary stock of the company.

Another Gary Group company, Telephone Bond & Share on Aug. 12 also declared regular quarterly dividend of 25 cents per share on 5% cumulative preferred stock of the company, & 25 cents per share on common stock.

REA APPROVES LOAN TO ILLINOIS COMPANY, MERGED FROM TWO MUTUALS: - Loan of $242,000 to Alhambra (Ill.) Grantfork Tel. Co., to be formed as commercial organization through merger of 2 stock mutuals, was approved last month by Rural Electrification Administration. Borrower plans to build new dial facilities for 424 existing subscribers, & to add 148 new customers. 2 dial central offices will be established.

$210,000 loan to Chesnee (S. C.) Tel. Co., was approved last month by REA. Company, now furnishing dial service to 375 subscribers over 62 miles of line, will use loan funds to provide additional central office equipment, construct approximately 100 miles of new line, & install facilities to serve 400 additional rural families.

GENERAL OF CALIF SERVING 600,000 PHONES, UP 100,000 IN TWO YEARS: - With an increase of about 100,000 in less than 2 years & of 220,000 since beginning of 1950, General Tel. of Calif. has reached the 600,000 mark in number of telephones served, company announced last month. 600,000th telephone was installed at ceremonies attended by Harlan W. Holmwood, exec. vice pres. of company.

To provide facilities to serve increasing population in its 4000-square mile area, General of Calif. has increased its investment in plant from about $75,000,000 to nearly $180,000,000 since 1st of 1950, & it is continuing to expand its facilities at rate of more than $2,000,000 each month.

HELPFUL LITERATURE: - New 8-page Bulletin (Form GAA2) describes Sterling Earth Boring Machines. Bulletin is available from Wyoming Valley Equipment Co., Inc., P. O. Box 1149, Kingston, Pa. . . . Miller Safety Equipment is described in new catalog available from Miller Safety Equipment Co., Inc., Franklin, Pa. Catalog is packed with valuable safety suggestions.

CALIFORNIA INDEPENDENT GETS APPROVAL FOR SYSTEM TO SERVE AIR FORCE: - An eight-channel, $69,000 radio relay system to be installed by California Interstate Tel. Co. has been authorized by FCC. Facilities to be provided over stations, to be located at Edwards Air Force Base & at Boron, Calif., were requested by US Air Force. System will be operated on unattended basis, with automatic devices making switch-overs in event of operational difficulties.

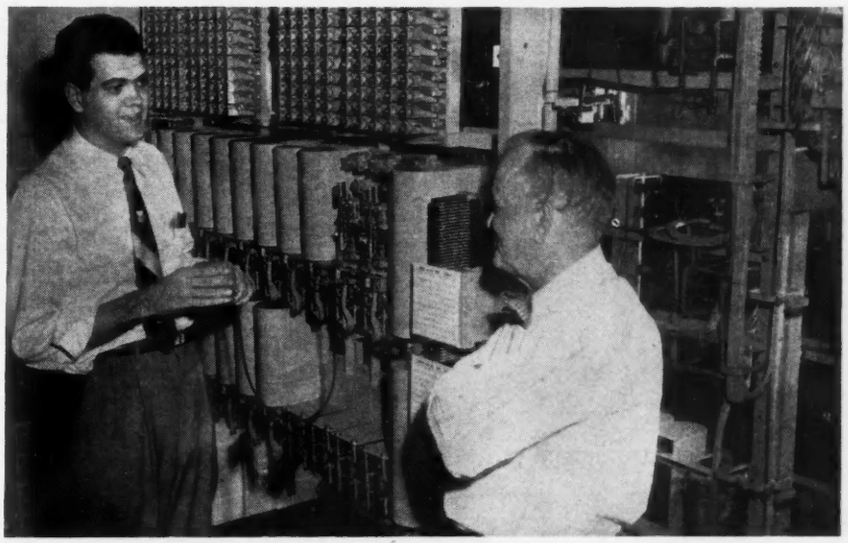
LOUISIANA COMPANY GETS FOURTH REA FARM TELEPHONE LOAN:-Fourth farm telephone loan to East Ascension Tel. Co., Gonzales, La., was announced last month by Rural Electrification Administration. Loans, totaling $876,000, will make it possible for company to serve about 2097 subscribers. Dial equipment obtained through previous loans already has

Please Turn To Page 12

Tele-views

During the recent cutover of the Sumter exchange of the Sumter (S. C.) Telephone Co. to automatic operation, GORDON SAUNDERS (left) company president, Miss M. PRISCILLA SHAW, mayor of Sumter, and MAX WOGE, cable splicer, inspected one of the 1800-pair cable splices.

Elyria, Ohio, has one of the few women telephone commercial managers in the country. It has been announced by Roy W. Ammel, president and general manager of The Elyria Telephone Co., that MISS RUTH KEITH, a company employe for 29 years, has been made commercial manager. She is fully responsible for the operations of the department. Miss Keith is prominent in religious, cultural, and civic circles in Elyria. She is a past president of The Elyria Quota Club. She was graduated by Elyria High School in 1924 and lives in the home in which she was born.



The Day was called "Automatic Day" at Bancroft, Mich., by R. D. TREZISE (left) district manager of the Union Telephone Co., and J. H. BRITTEN, who helped install the original Bancroft Exchange in 1902. The Bancroft exchange name is now Melrose.

The Sumter exchange of the Sumter (S. C.) Telephone Co. was recently cut-over from common battery to automatic service. The above photo shows some of the plantmen and equipment used to prepare the plant for conversion.

been cut over for more than 1100 customers. Latest loan will permit company to add another 600 subscribers.

In Kansas, Harper County Rural Tel. Assoc. of Anthony granted $363,000 to build system to serve 800 subscribers. Properties now serving 486 subscribers are to be acquired by cooperative, & 4 dial central offices will be installed. About 208 of 244 miles of acquired line will be rebuilt.

Ellijay (Ga.) Tel. Co., now serving 402 subscribers, expects to add 273 customers through construction to be financed by $244,000 loan. New construction will include dial central office at Ellijay, & 82 miles of line.

Loan of $226,000 has been earmarked for Cross Tel. Co., Warner, Okla., now serving 256 subscribers. 3 unattended dial offices will be installed, 117 miles of new line will be built, & estimated 269 subscribers will be added.

INCREASE IN LEARNERS PAY RATE IN INDEPENDENT INDUSTRY SEPT. 20: – An increase of 7 1/2¢ in minimum wage rates for learners in Independent telephone industry will become effective on Sept. 20, it was announced Aug. 20, by F. Granville Grimes, Jr., Acting Administrator of US Labor Department's Wage & Hour & Public Contracts Division.

1st 320 hours of learning period, minimum hourly rate will be 67 1/2¢ instead of present 60¢. For remaining 160 hours, rate will be 72 1/2¢ instead of 65¢ minimum now in effect.

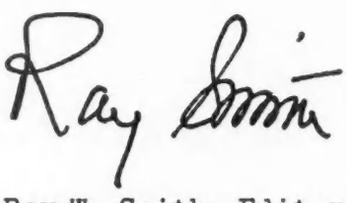
Mr. Grimes said that all available information "indicates that the higher wage rates are necessary and appropriate in the light of the statutory standard." He added that "careful consideration had been given to comments submitted by interested persons, following announcement in July of the administrator's proposal to amend the regulations."

GENERAL LAWTON TO RETIRE FOR PHYSICAL REASONS, ARMY ANNOUNCES:-Maj. Gen. Kirke B. Lawton, commanding general of Fort Monmouth, N. J., since Dec. 1, 1951, & for 3 years previously Deputy Chief Signal Officer, retired Aug. 31 for physical disability reasons, Department of Army announced. He retired with permanent rank of brigadier general. General Lawton, who retired with a physical disability of 69%, will be 60 years old on Nov. 3, & his retirement would have been mandatory at end of Nov.

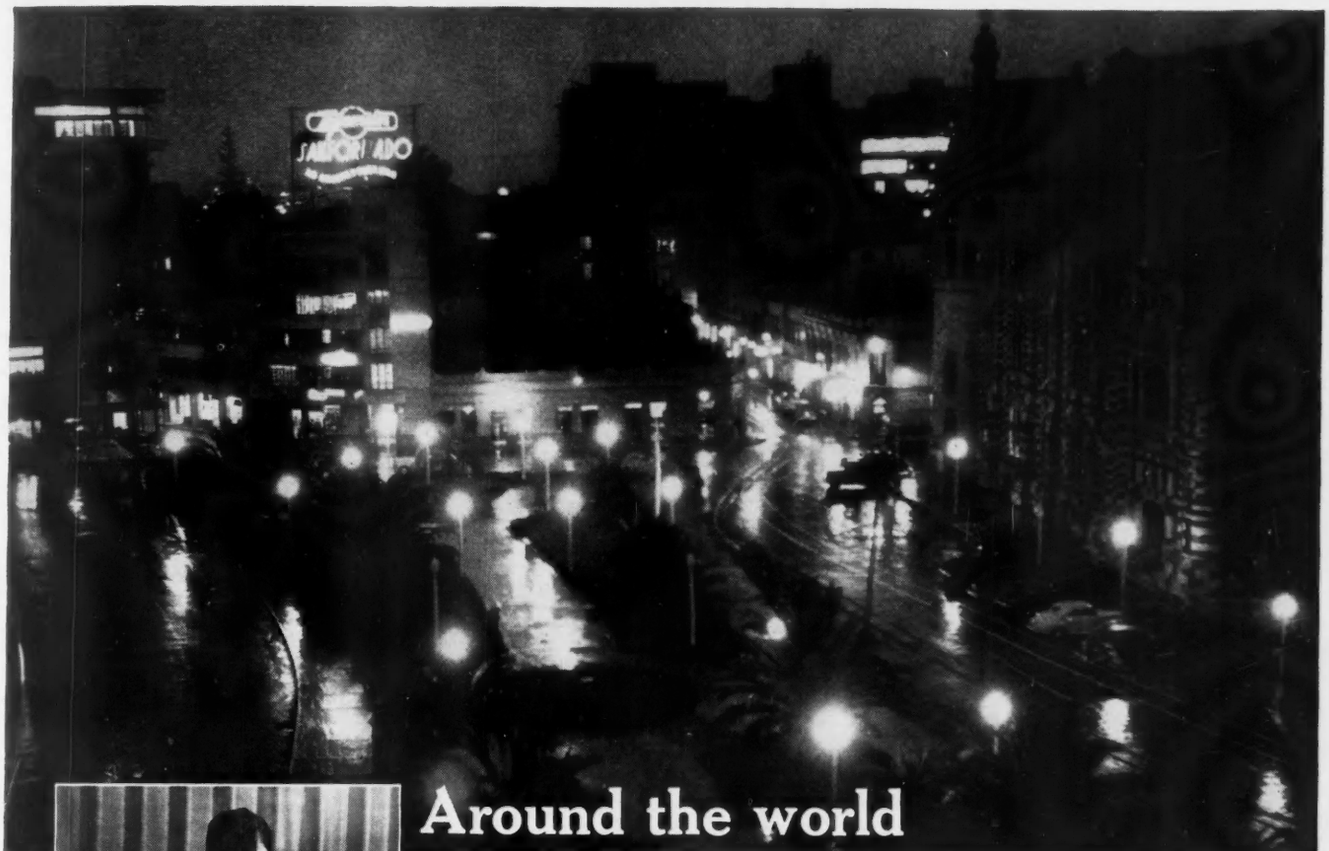
FCC INITIAL DECISION APPROVES INDIANA BELL ACQUISITION OF 5 FIRMS:-Ruling that telephone service provided by 5 small Indiana Independent companies "is inadequate to meet the requirements of subscribers," FCC Examiner Claire W. Hardy last month issued initial decision looking toward approval of acquisition of the five firms by Indiana Bell Tel Co.

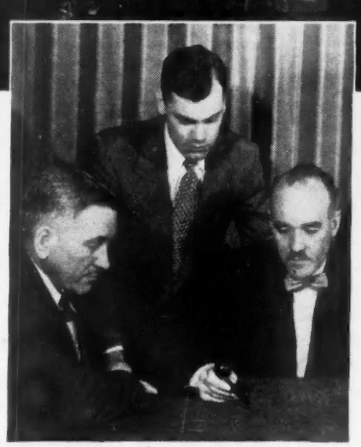
Acquisitions approved by Public Service Commission of Indiana, involve Armstrong Tel. Assoc., Chandler Tel. Co., Pikes Peak Tel. Co., Caborn Tel. Co., & Marrs Township Tel. Co., which serve 795 subscribers. Total purchase price is about $13,800.

At same time, FCC adopted examiners' initial decisions approving acquisitions by Southwestern Bell Tel. Co. of De Soto (Mo.) Tel. Exchange, & by Wisconsin Tel. Co. of Van Dyne (Wisc.) Tel. Co.



Ray W. Smith, Editor





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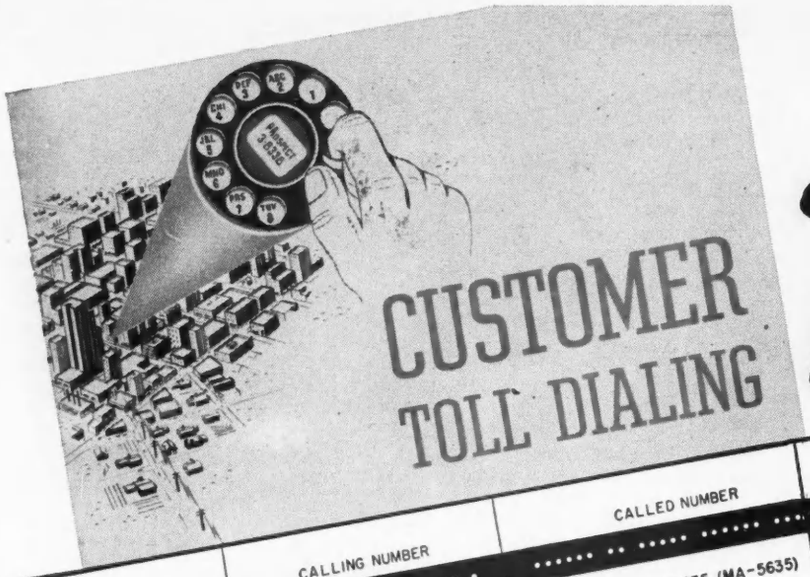


CUSTOMER TOLL DIALING

Proved

CALLED EXCHANGE	CALLING NUMBER	CALLED NUMBER
SPOKANE 97	WALLACE 6651	SPOKANE 625635 (MA-5635)

CALLING EXCHANGE	DAY RATE	MONTH	DATE	TIME
WALLACE 94	(2)	MARCH (03)	22	12 7 HOURS (12 42 P M

The analyzer will adjust itself for the difference between day, night, Sunday or holiday rates when they are coded on the tape by the exchange recorder. Rate adjustments in the machine can be changed so that it may be used to serve several networks, and to accommodate changes in rate levels.

Illustrated below is a close-up of the printing mechanism, showing the production of completed tickets. There is also a reproduction of an actual recording tape and a toll ticket, showing the perforations of a typical recorded call and the final interpretation of it by the analyzing and printing mechanisms.

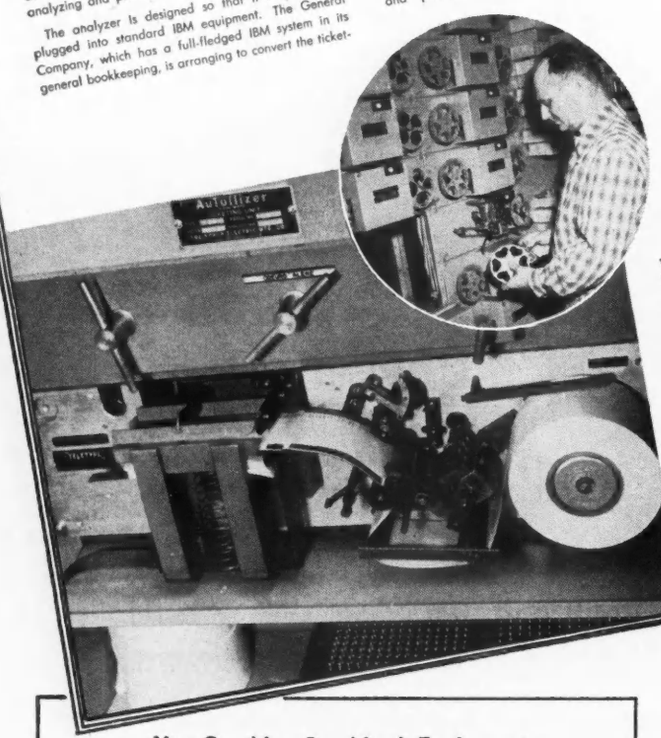
The analyzer is designed so that it may also be plugged into standard IBM equipment. The General Company, which has a full-fledged IBM system in its general bookkeeping, is arranging to convert the ticketing equipment to this system. So far as the network exchanges are concerned, the same type of North recording equipment is installed in all centers. The analyzing equipment at the main office is common to all.

Some of the first questions to arise when the initial customer toll dialing network was planned were those of customer acceptance and reaction to dialing the additional digits. A special program of advance education was prepared by General of the Northwest to insure complete understanding of the new service. The program consisted of: interviews with key customers; newspaper articles and advertisements; radio spot announcements; talks before service groups; pamphlets containing detailed information on customer toll dialing and "personal number directories" for the listing of most frequently called out-of-town telephones, as well as instructions in the telephone directory.

Results appear to have more than justified the modest cost of this effort. Due to the intense sectionalism of this area and the fact that the customers were to receive this new type of service first in the Northwest, a considerable measure of community and personal pride was actually created before CTD was placed in operation.

The entire theme of the public relations program was aimed at explaining thoroughly the accuracy, speed, privacy and efficiency of the new service. It told the public that CTD was designed specifically for them and for their communities in order to give them the finest station long distance service available and that they would receive the many benefits accruing from the installation.

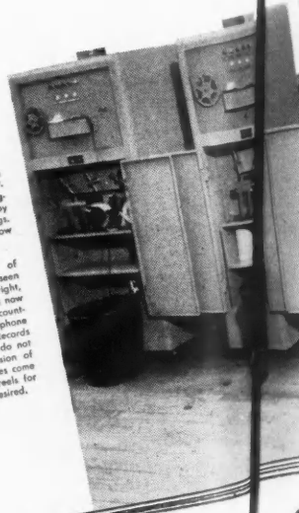
Approximately one year after CTD had been established in the mining area, over 4,000 post card ques-



The upper illustration at left shows the removal of a full reel of recorded tape, for mailing to the central accounting office. The recorder is deactivated long enough to replace a fresh reel of tape. A feature of this system is that the tape runs through the analyzer just as it comes from the recorder, without rewinding.

At lower left is the Teletype printer of an electronic analyzing unit in action. Information for billing and accounting, indicated by perforations in the tape like those at the top of this page, is printed on a continuous strip and automatically cut into tickets of conventional size. This unit is adjusted for the rate levels at the Coeur d'Alene office, but can be changed for any combination by means of interchangeable plugs. Handles of two plugs show above the printer.

The general arrangement of the analyzing unit can be seen in the illustration at right, showing the three machines now installed in the central accounting office of General Telephone Company at Spokane. Records maintained at this office do not require permanent retension of the tape but the machines come equipped with take-up reels for convenient storage if desired.



Page 12

Page 13

You Can Now Buy North Equipment
in Canada through
ERICSSON TELEPHONE SALES OF CANADA, LTD.
1410 Stanley St., Montreal 2, P.Q.

1854 · COMMUNICATIONS · 1954 EQUIPMENT
NORTH 70TH ANNIVERSARY

dby Performance

GET YOUR COPY

of this interesting story on Customer Toll Dialing with fully automatic ticketing.

THE best way to get true facts about a certain type of telephone equipment is to ask someone using it—"What has been your experience?"

When it comes to automatic ticketing of network toll calls, one of the most experienced companies you will find is General Telephone Company of the Northwest, a member company of the General Telephone System. The brochure pictured at left tells the story of how this system works in several General networks.

This is not a piece of advertising literature. It is not even a testimonial in the usual sense, as they point out that their presentation of the experience does not constitute an endorsement of any equipment. It is actually a straightforward story of area toll dialing and its relation to eventual nationwide customer dialing, a subject in which General has been an aggressive pioneer. It was originally prepared for limited distribution in connection with talks on customer toll dialing by Mr. W. R. Jarmon, president of General of the Northwest.

Because North AuTollizer equipment is described in the brochure strictly on the factual basis of its operation in a successful system, we obtained permission to distribute extra copies at our own expense.

You should have a copy.

In no better way could you get the facts regarding a user's actual experience with critical telephone equipment. For our part, we are willing to rest our case on this Proof by Performance of the

NORTH AuTollizer

Toll Ticketing that Pays its Way

THE NORTH ELECTRIC MANUFACTURING COMPANY

655 South Market Street • Galion, Ohio

Industry NEWS Briefs

This is your department. The editor wants news regarding your company. Send news items and photographs to News Briefs' Editor, 7720 N. Sheridan Road, Chicago 26, Illinois.

Dial Cutover Completed At Flushing, Ohio

THE FLUSHING (Ohio) exchange of Ohio Consolidated Telephone Co. was cut over from magneto to automatic operation on July 1, 1954, the control point to be at Cadiz, which is the district headquarters exchange approximately 13 miles distant.

A new central office building was constructed to house the 250 lines of automatic equipment, serving approximately 530 telephones in Flushing and the surrounding rural area. The new central office building, together with the automatic equipment, cable, telephones and wire plant, representing an investment of more than $75,000, is a portion of the company's $1,750,000 construction program now in progress.

Mayor Ray Romich of Flushing and other Flushing businessmen attended the company's cutover ceremony on July 1, and the mayor placed the first call over the new automatic equipment. Representatives from the company's Portsmouth headquarters office were also present for the event.

Customers in the Flushing area were prepared for the change of all telephone numbers by the issuance of a new telephone directory a few days in advance, and the cutover was accomplished without a "hitch."

Walter M. Butschy is district manager of the Cadiz district, which, in addition to the Flushing exchange, includes offices in the towns of Cadiz, Adena, Brilliant, Dillonvale, Holloway, Jewett, Mount Pleasant, New Athens, Scio, Smithfield and Tiltonsville, Ohio.

Cartwright Named To Oklahoma Commission

WILBURN CARTWRIGHT has been appointed to the Oklahoma Corporation Commission to fill the unexpired term of former Chairman Reford Bond, it was announced last month. Ray O. Weems, veteran Oklahoma Commissioner, has been named chairman of the agency, while Ray C. Jones was appointed vice chairman.

REA Issues Telephone Progress Report

DURING THE past year, Rural Electrification Administration (REA) telephone borrowers completed more cutovers to dial service, built more miles of new line, and connected more subscribers than during the four previous years of the telephone program combined, REA announced last month in a review of activities during the fiscal year ended June 30.

The telephone application backlog dropped from 505 requests, totaling $113,000,000, at the start of the year, to 270 applications, amounting to $78,000,000, when fiscal 1954 ended, REA reported. A month later, the backlog figure was $74,000,000. During the year, applications totaling $68,000,000 were received, while

DIAL CUTOVER AT FLUSHING: — (Left) MAYOR RAY ROMICH of Flushing, Ohio, places first call over Ohio Consolidated Telephone Co.'s new dial equipment as District Manager, W. M. BUTSCHY, Cadiz, looks on. At right, KEITH WAGNER, district plant superviser explains operation of new equipment.

Ankoseal Telephone Cables are sold to Independent telephone companies through Ankoseal Telephone Supply Distributors only.

the CUSTOMER says it "talks better"

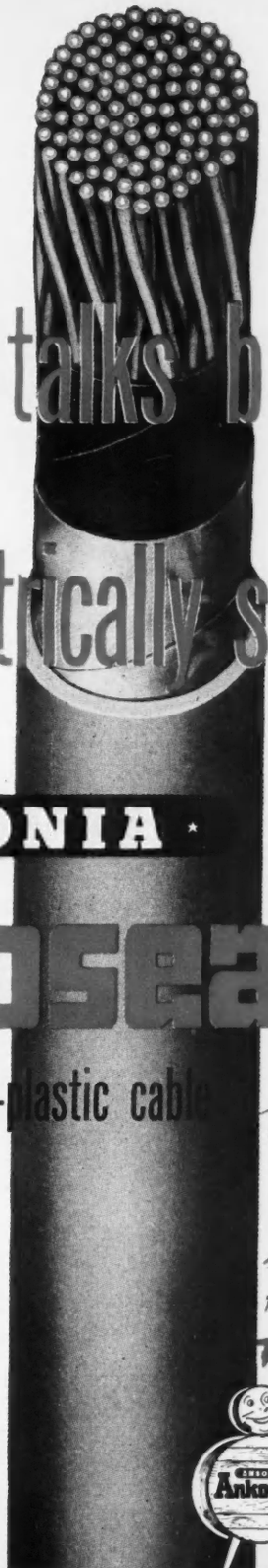
the ENGINEER says it's "electrically superior"

they both mean

★ ANSONIA ★

Ankoseal®

the quality all-plastic cable



One of the many users who was well pleased with his Ankoseal telephone cable recently said it "talks better" which sums up in practical terms the end result of all the care we take to make Ankoseal "electrically superior".

TO BE TALKED ABOUT FOR "BETTER TALK" USE ANKOSEAL.

ANKOSEAL ALSO IS—

CHEMICAL RESISTANT—WATERPROOF
WEATHERPROOF—LIGHTER WEIGHT

Welcome to
ROOM 547
Conrad Hilton
Hotel
Oct. 11-12-13

THE ANSONIA WIRE & CABLE COMPANY

ANSONIA, CONNECTICUT • PHONE: ANSONIA 4-3306

MIKE THE MOLE SAYS:

Give the GUY a CHANCE

I get around... and I know that Chance Anchors really hold

YOU GET THE MOST FOR YOUR MONEY WITH CHANCE ANCHORS the most complete line

8-WAY EXPANDING

The guy load is distributed all around the anchor—no wasted space between blades. Usually installed in clay or loam.

NO-WRENCH SCREW

For hand or machine installation. Pitch-controlled blade goes down faster and adds to holding power in sandy soil, soft clay or loam.

NEVER-CREEP

Made of structural steel. Pulls *entirely* against solid, undisturbed earth. For extra heavy loads in clay or loam.

CROSS-PLATE

For heavy-duty anchoring in machine-bored holes. Holds better than logs or slugs. Saves time and money.

SWAMP SCREW

For swamps, marshes, quicksand, river crossings or seasonally flooded areas. Screws down deeply by adding sections of pipe.

8-WAY CONE

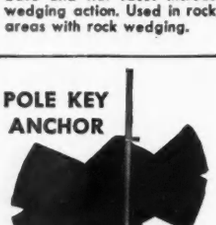
Acts as inverted wedge. Flaring base and flat faces increase wedging action. Used in rocky areas with rock wedging.

EXPANDING ROCK

No grouting necessary. The greater the pull, the tighter it wedges against solid rock. Set in 2" drilled hole.

WRENCH TYPE SCREW

All steel—double arc welded. Anchor hub absorbs installation strain. For light loads in sandy soil, soft clay or loam.



POLE KEY ANCHOR

Keys poles at the butt to reinforce them against unbalanced loads in soft soil. Ideal for congested urban areas.

Both the soil type and condition are important factors in determining the type of installation and the kind of anchors to use. That's why Chance Anchors are made in so many types and sizes. The anchors shown above are made in a wide variety of sizes. Each type is designed for certain soil and guying conditions. Each of these anchors will do its specific job better than any other anchor you can choose.

Protect your investment in line construction. Analyze your soil and guying conditions, and specify the Chance Anchors that meet your particular requirements.

There is a CHANCE Anchor Distributor in your area who can probably fill your order directly from stock.

SPECIFY CHANCE FOR SERVICE!

A·B·CHANCE CO·

CENTRALIA, MISSOURI

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ABC INDUSTRIES

CA54-2B

$75,000,000 was lent. Unadvanced loan funds rose to $125,000,000 from $86,000,000, with REA pointing out that unadvanced money constitutes 68% of the loans to date. It noted that "emphasis on getting borrowers cleared for first advance of loan funds and the progress being made in rural telephone construction will result in faster translation of loan funds into telephone service."

B & O Names Wallis To New Post

J. H. WALLIS, superintendent of communications of the Baltimore & Ohio Railroad, has been placed in charge of the B&O communications department. Following the recent death of A. S. Hunt, chief engineer-communications and signals, that post has been abolished by the railroad.

Washington Company Gets 3rd REA Loan

THE COHASSET Beach Telephone Co., Aberdeen, Wash., recently received its third Rural Electrification Administration rural telephone loan. The $50,000 in additional funds was required by changes in system design, and to provide facilities to serve 58 subscribers not previously covered, REA said. The subscriber now has received a total of $221,000 from REA, and plans to serve 658 subscribers.

Wisc. Tel. To Buy Van Dyne Tel. Co.

ACQUISITION by the Wisconsin Telephone Co. of the Van Dyne (Wisc.) Telephone Co., which serves about 200 subscribers about halfway between the Oshkosh and Fond du Lac exchanges areas of the Wisconsin company, was certified to be in the public interest in an initial decision by FCC Examiner Harold L. Schilz.

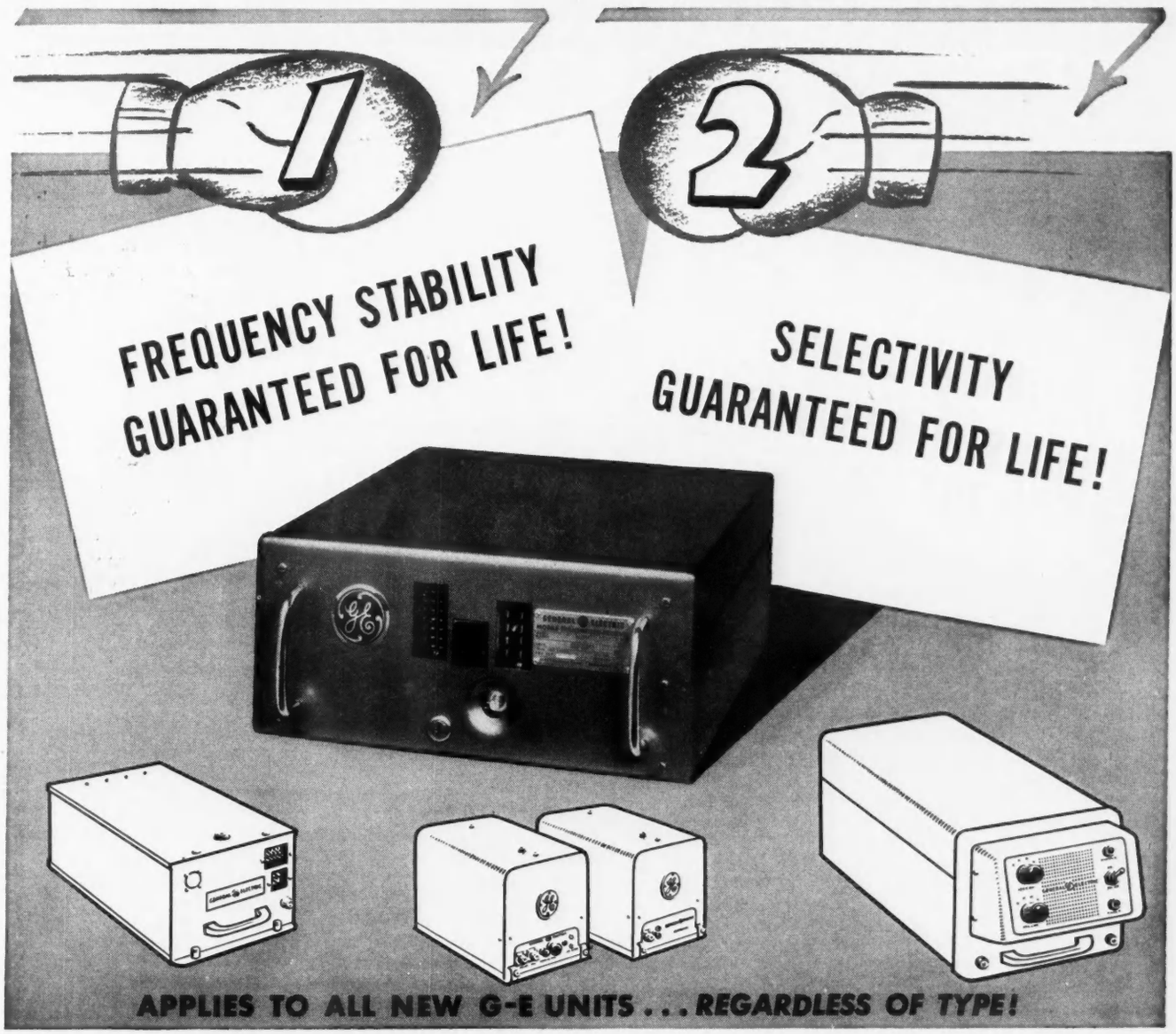
Darley Named Supervisor

AT THE WESTERN Counties Independent Telephone Association convention held recently at London, Ontario, Charlie Darley was introduced to delegates as area training supervisor working with the Independent companies on behalf of the Bell Telephone Co. of Canada.

Mr. Darley succeeds Reg. Manewell, whose retirement was announced a few weeks back.

E. M. Patton, area independent

GIVE YOUR 2-WAY RADIO SYSTEM


1
2
FREQUENCY STABILITY GUARANTEED FOR LIFE!
SELECTIVITY GUARANTEED FOR LIFE!
APPLIES TO ALL NEW G-E UNITS . . . REGARDLESS OF TYPE!

2-WAY MOBILE RADIO

HERE . . . and *only from General Electric* . . . you have today's most potent influence on mobile radio design. G.E. guarantees protection from two major causes of unpredictable 2-way radio performance!

Guaranteed Selectivity with new multi-coil IF transformers guards your system against interference 24 hours a day! *Guaranteed Frequency Stability* clearly interprets the superior value of G-E crystals. Both, go the lifetime limit!

Printed space just can't tell the whole story. You'll want it firsthand, so pick up the phone now . . . call the G-E Communications Counselor at a local sales office. Or, write to: *Section X1974-12, General Electric Co., Electronics Park, Syracuse, N. Y.*

Progress Is Our Most Important Product

GENERAL ELECTRIC

companies relations supervisor with the Bell system, in introducing Mr. Darley, said he would be able to give the independent companies every possible assistance and co-operation.

Mexican Government Plans Automatic Telex System

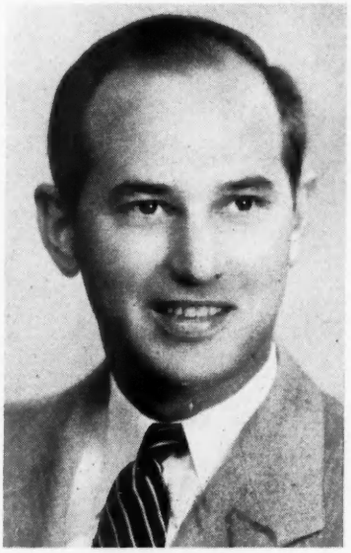
CARLOS NUNEZ, Chief of the International Division of the Mexican Bureau of Communications, announced that his government plans to establish an automatic telex system.

The new system, similar to the teletypewriter service provided by Bell System companies, would be used to connect banks, airlines, and other businesses with equipment to be connected by wire rather than by radio.

General of Ky. Announces Organization Changes

BERNARD LEBARON, vice president and chief engineer of General Telephone Co. of Kentucky, has resigned to accept a special assignment position with the General Telephone Company of California. Mr. LeBaron will be located at Santa Monica, Calif.

Roger L. Lyons has been appointed chief engineer of General of Kentucky. Mr. Lyons is a graduate of the University of Kentucky with a B.S. in Electrical Engineering. He has been with the Kentucky company since 1939 in various capacities.



ROGER L. LYONS has been appointed chief engineer of General Telephone Co. of Kentucky.

B. D. Robertson has been appointed general plant superintendent of General of Kentucky. Mr. Dewey started with the General company in

HUBBARD SERVISLEEVS

Hot Galvanized

It takes only four or five seconds to slip the ServiSleev over the guy wire and drive it into place over the loose ends of the strand. No special tools are needed.

There is no damage to fingers; the installation is quick, neat, secure, permanent. Hubbard ServiSleevs are of unique patented design and are made of heavy galvanized steel that holds its shape and keeps its grip. They are universally used by the largest telephone companies. Available for all standard guy strand.

"Hang the load on Hubbard Hardware!"

OVERHEAD

Cable Suspension Material—Wireholders Pole Seats and Balconies—Clevises Braces—Drive Hooks—Messenger Dead Ends—Extension Arms—Long Span Material—Pins—Clamps—Guards—Stubbing Bands—Guy Protectors—Guy Clamps Pole Struts—Clips—Straps—Hangers Carriage Bolts—Rings—Transposition Brackets—Eye Bolts—Pole, Corner and House Brackets—Guy Hooks—Strain Plates—Storm Guy Straps—Lags—Machine and Hubeye Bolts—Sidewalk Guys REA Telephone Hardware

UNDERGROUND

Cable Racks—Manhole Ladders and Steps Pulling-in Irons—Expanding Anchors Cable Shields—Screw Steelwing Anchors Anchor Rods—Ground Rods and Clamps

HUBBARD AND COMPANY

PITTSBURGH • CHICAGO • OAKLAND, CALIFORNIA

TWO THINGS to remember --

FOR DEPENDABLE
GROUNDING PROTECTION

1

DRIVE

Copperweld TRADE MARK

SECTIONAL
GROUND RODS

DEEP

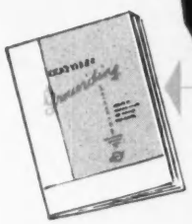
FOR YEAR 'ROUND
PROTECTION

2

MEASURE

RESISTANCE OF EACH SECTION

ALLOW FOR
SEASONAL
VARIATION

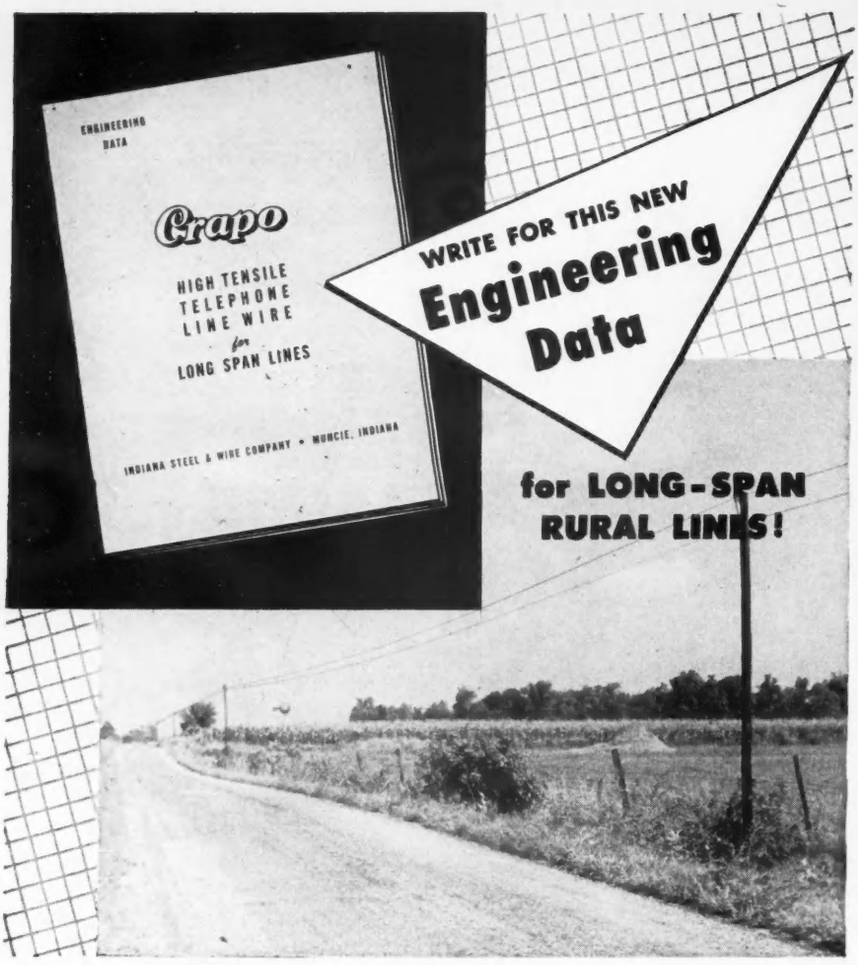


NEW BOOKLET
"Practical Grounding"

Its 36 pages are packed with the latest authoritative information on GROUNDING. A copy belongs in the files of every engineer responsible for planning reliable low-resistance grounds. Write for your copy today.

COPPERWELD STEEL COMPANY
WIRE AND CABLE DIVISION
Glassport, Pa.
For Export: Copperweld Steel International Company, New York

TOP PERFORMANCE FROM PROTECTIVE EQUIPMENT DEPENDS ON LOW-RESISTANCE GROUNDS


ENGINEERING DATA
Crapo
HIGH TENSILE TELEPHONE LINE WIRE for LONG SPAN LINES
INDIANA STEEL & WIRE COMPANY • MUNCIE, INDIANA
WRITE FOR THIS NEW
Engineering Data
for LONG-SPAN RURAL LINES!

SPECIFY *Crapo* HIGH-TENSILE TELEPHONE LINE WIRE FOR LOWER OVERALL COST

Crapo HTL-85 — For Medium Long Spans

Crapo HTL-135 — For Longer Spans

Crapo HTL-190 — For Extra Long Spans

● FEWER pole structures are required where *Crapo* High-Tensile Line Wire is used in building rural telephone lines. This means substantial savings in time, labor and material. There are fewer holes to dig and poles to set, less material to be handled, installed and connected — all of which contribute to lower overall construction costs.

Crapo High-Tensile Line Wire also makes for lower maintenance costs. Its superior tensile strength offers increased resistance to ice and wind loads . . . provides a greater margin of safety. Heavy galvanized coatings assure dependable, lasting protection.

For maximum savings in the construction and maintenance of rural telephone lines, specify the *Crapo* Telephone Wire which best fits your requirements.

LATEST ENGINEERING DATA, including Stringing Sags and Tensions, Staking Tables and Guying Tables for Heavy, Medium and Light Loading Districts, are now available. Write today for your copy of Data Book No. N-53.

INDIANA
STEEL AND WIRE CO., MUNCIE, IND.

B. D. ROBERTSON, has been named general plant superintendent of General Telephone Co. of Kentucky.

Kentucky in 1940 as a central office apprentice and has advanced through the ranks to his present position of general equipment superintendent.

General Tel. of S. W. Reports on Rate Boosts

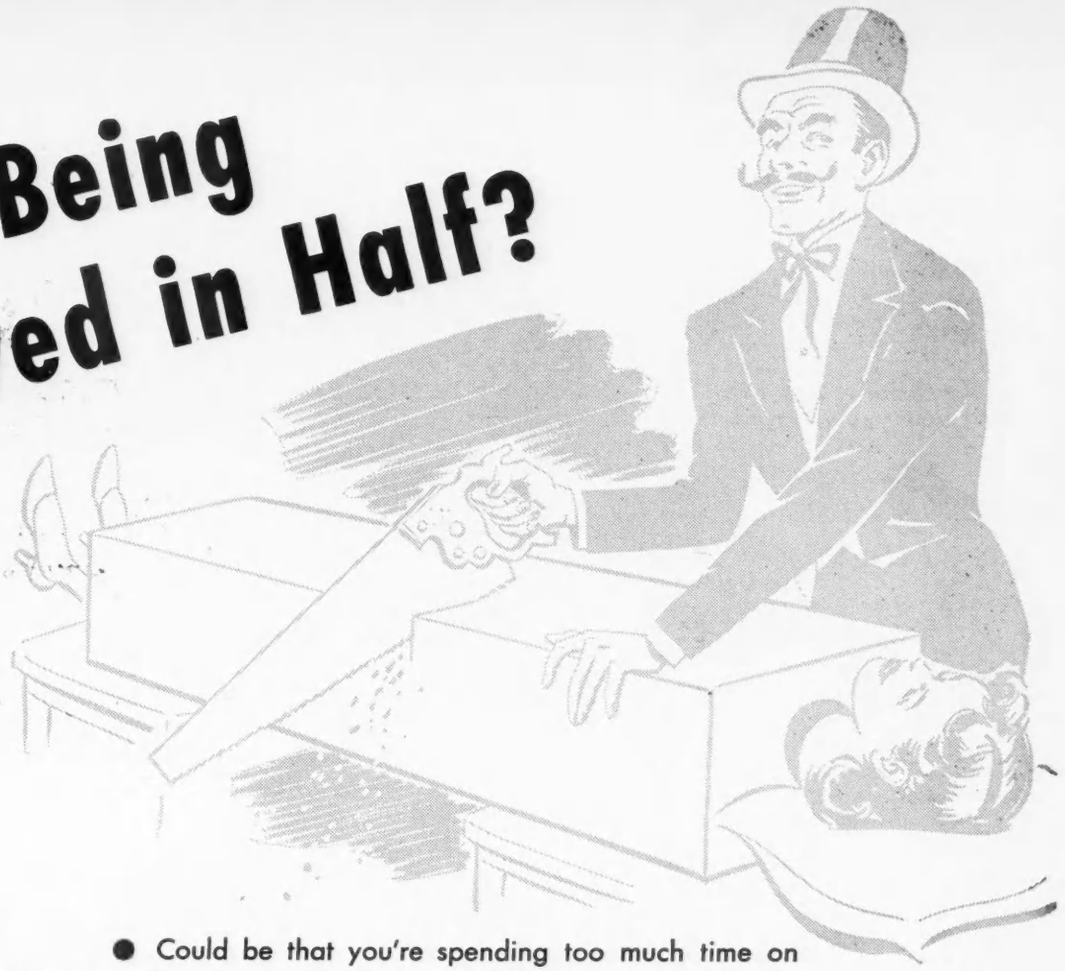
GENERAL TELEPHONE CO. of the Southwest obtained the following rate increases in July:

Exchange		Old Rate	New Rate
Amherst, Texas			
Dial	Bus.—1-Party	$5.00	$7.00
283 Stations	2-Party	4.00	5.75
	Res.—1-Party	3.00	4.00
	2-Party	2.50	3.25
Brownfield, Texas			
Dial	Bus.—1-Party	9.50	12.50
2507 Stations	2-Party	7.50	10.00
	Res.—1-Party	4.75	6.25
	2-Party	4.00	5.25
	4-Party	3.50	4.50
Bovina, Texas	(Extended Area Service)		
Dial	Bus.—1-Party	6.25	7.25
191 Stations	2-Party	4.75	5.50
	Res.—1-Party	3.50	3.70
	2-Party	3.00	3.15
Friona, Texas	(Extended Area Service)		
Dial	Bus.—1-Party	6.50	8.00
	2-Party	5.00	6.25
	Res.—1-Party	3.75	4.15
	2-Party	3.00	3.30

At the end of July there were 25 cases filed with cities in Texas representing an annual increase in revenues of $756,135 and a case filed with the Oklahoma Corporation Commission representing an increase of $157,400, and a case filed with the Arkansas Public Service Commission representing an annual increase of $302,231.

To date this year General of the S. W. has completed 23 rate cases totaling an annual increase in revenue of $191,946.

Are You Being Sawed in Half?



● Could be that you're spending too much time on directory advertising and still are not getting profitable results. It's impossible to be half-manager, half-advertising man. Estimate the hours that you spend on advertising details. Couldn't this time be spent more wisely elsewhere in your management job? Why not let a Loomis representative show the increased revenue – with public relations dividends – of the complete Loomis directory advertising service.

KNOW-HOW TO SOLVE YOUR DIRECTORY PROBLEMS

"Where to Call"

● 666 cities and towns in 20 states are served by the 234 directories that retain Loomis services.

LOOMIS ADVERTISING COMPANY

FT. WAYNE, IND.
229 E. Berry St.... EAstbrook 3477

ST. LOUIS, MO.
506 Olive... GArfield 3700

OMAHA, NEBR.
Omaha Nat'l Bank Bldg.... ATlantic 0188

KANSAS CITY, MO.
810 Baltimore... HArrison 1270

PHILADELPHIA, PA.
1201 Chestnut... Rittenhouse 6-4440

BALTIMORE, MD.
1229 North Charles... Vernon 7-0642

WORK GOES
FASTER, EASIER
with SEYMOUR SMITH tools

The choice of tree men for generations

No. 11
Pruner Head

Center Cut Action

"TELEPHONE" TREE PRUNERS

The very finest of tree pruners! Virtually unbreakable heads, selected spruce poles with positive locking, seamless aluminum joints. Simple, powerful action. No. 11-18, 1" capacity, $16.00. No. 12-18, complete pruner, 1½" capacity, with 18 foot pole, $24.75. Extension sections available.

POLE PRUNING SAW

No. 20 SAW HEAD
Hand only $4.20
with 18 ft. pole $16.00

16" needle-tooth saw blade fits in 3 different positions. Extra large hook for pulling out loose branches. Paint brush holder.

LOPPING SHEARS

6 models to choose from. Cut up to 2" branches with ease.

NEW, FINEST EVER
PRUNING SAWS

A new Seymour Smith development — the fastest, easiest cutters on the market. Complete line of 6 models covering all requirements up to chain saw work.

FREE: Send for full descriptive matter and prices on all Seymour Smith products for professional pruning and tree care.

SEYMOUR SMITH
OUR 104th YEAR
The Line of Quality

SEYMOUR SMITH & SON, INC.,
42502 Main St., Oakville, Conn.

from the Capitol

Washington Bureau Reports

By ROLAND DAVIES & FRED HENCK

NEW ADVISORY Committee formed to assist REA's rural telephone program . . . Bill restricting government competition dies as Congress adjourns.

REPRESENTATIVES of all groups with direct interest in the Rural Electrification Administration's farm telephone loan program have accepted membership on an advisory committee, and will meet with REA Administrator Ancher Nelsen and other top officials of the agency later this year, it has been announced.

The 18-member committee includes a state commissioner, officials of the Bell System and the US Independent Telephone Association, heads of telephone borrowers, a communications consultant, and two officials of electric cooperatives who have been active generally in the REA programs.

Mr. Nelsen's intention is to seek advice and counsel of the group on the whole field of rural telephone problems. The committee will be a "working group" in the sense that it will present or receive current problems for study, analyze them, and atempt to come up with practical solutions.

No definite date has been scheduled for the first meeting, but it is not expected to be held until late November or December. Some members of the group, and REA officials, will be occupied periodically until then with regional meetings of the National Rural Electric Cooperatives Association.

It was emphasized by REA spokesmen that the agency hopes the committee will bring in topics for discussion with REA officials at the meeting, as well as considering subjects raised by representatives of the government agency during the session.

In addition to discussing and attempting to solve problems incident to the farm telephone program raised by REA, borrowers, and the telephone industry, Mr. Nelsen hopes to bring about a better understanding of REA's objectives for the activity through the group's deliberations.

Wisconsin Public Service Commis-

FRONT COVER

Students and Instructors at Nebraska Telephone Association Accounting School, Kearney, Neb., August 10-13, 1954.
BACK ROW: — Al Lukow, Blue Hill; Jerry Streff, Roseland; Willard Raile, Benkelman; George Porterfield, Heartwell; Mrs. George Porterfield, Heartwell; Herman Weissert, Eustis; Bertha Monnich, Hooper; Bernice Johnson, Herman; W. S. Wiles, Clearwater; John C. Haines, Naponee; Mrs. John C. Haines, Naponee; M. J. Barr, Kearney.
MIDDLE ROW: — James L. Morrison, Lincoln; Craig Weeks, North Platte; Purl Mock, Springview; Evelyn Pearson, Campbell; Mrs. Al Lukow, Blue Hill; Mildred Werner, Chambers; Lois Koller, Arapahoe; Olive Silvernail, Aurora; John Bonebright, Lincoln; LeRoy Sieckmeyer, Lincoln.
FRONT ROW: — Pat J. Carey, Petersburg; Mrs. Purl Mock, Springview; Mrs. G. Ables, Amherst; Mrs. I. M. Weeks, Kenesaw; Mrs. R. E. Potter, Wilcox; Mrs. W. S. Wiles, Clearwater; Doris Strickler, Bertrand; Mrs. Esther Schroeder, Miller; Wm. B. S. Hill, Keystone.

"DO IT YOURSELF" MAINTENANCE TIPS
from the GOULD Plus-Performance Plan

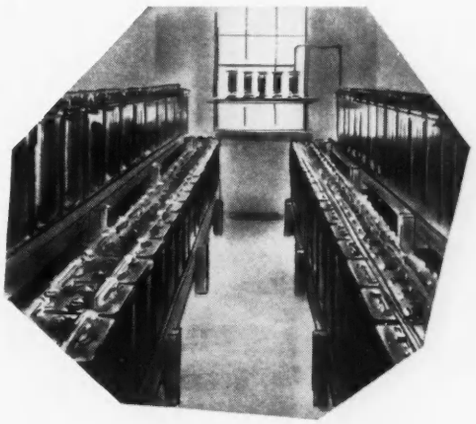
HERE'S MONEY-SAVING MAINTENANCE TIP #1

"AN EASY WAY TO CUT BATTERY-POWER COSTS"

BEST WAY TO INSTALL GLASS JAR CELLS ▸

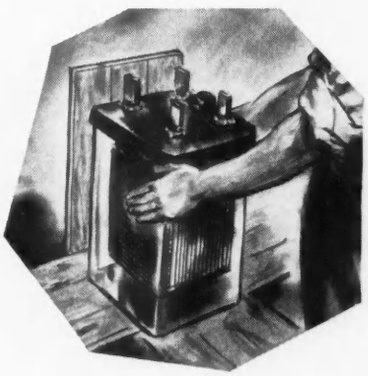
1. *Locating Battery Rack* ▸

Rack should be so located that all cells are accessible. Rack must be level, coated with acid-resistant paint and insulated from floor. If more than one rack is used they should be insulated from each other.



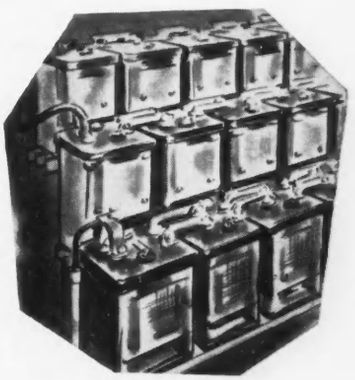
2. *Uncrating* ▸

Remove top and sides of boxes in which cells are shipped. Slide cells or trays out of boxes. Do not lift by terminals. Lift by supporting from beneath.



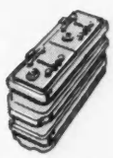
3. *Installing* ▸

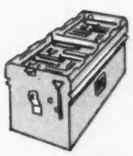
Place *all* cells on rack before making connections. Clean all contact surfaces and coat with vaseline. Start in center of a row and attach connectors, lining up cells in a straight line. Check for polarity and over-all voltage with voltmeter.

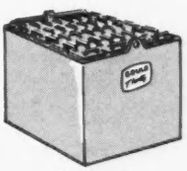


GOULD Batteries

GOULD-NATIONAL BATTERIES, INC.
TRENTON 7, N. J.


For Railroad Air Conditioning and Lighting


For Mine Shuttle Cars and Locomotives


For Electric Industrial Trucks

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model 5000 WD is a sound investment for YOU...

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GET THE FACTS! Write for Bulletin No. 931 today.

York-Hoover Corporation
YORK, PENNSYLVANIA
Body Division

sioner George P. Steinmetz, former Chief Engineer of the commission and long-time Chairman of the National Association of Railroad & Utilities Commissioners' Engineering Committee, is a member of the group.

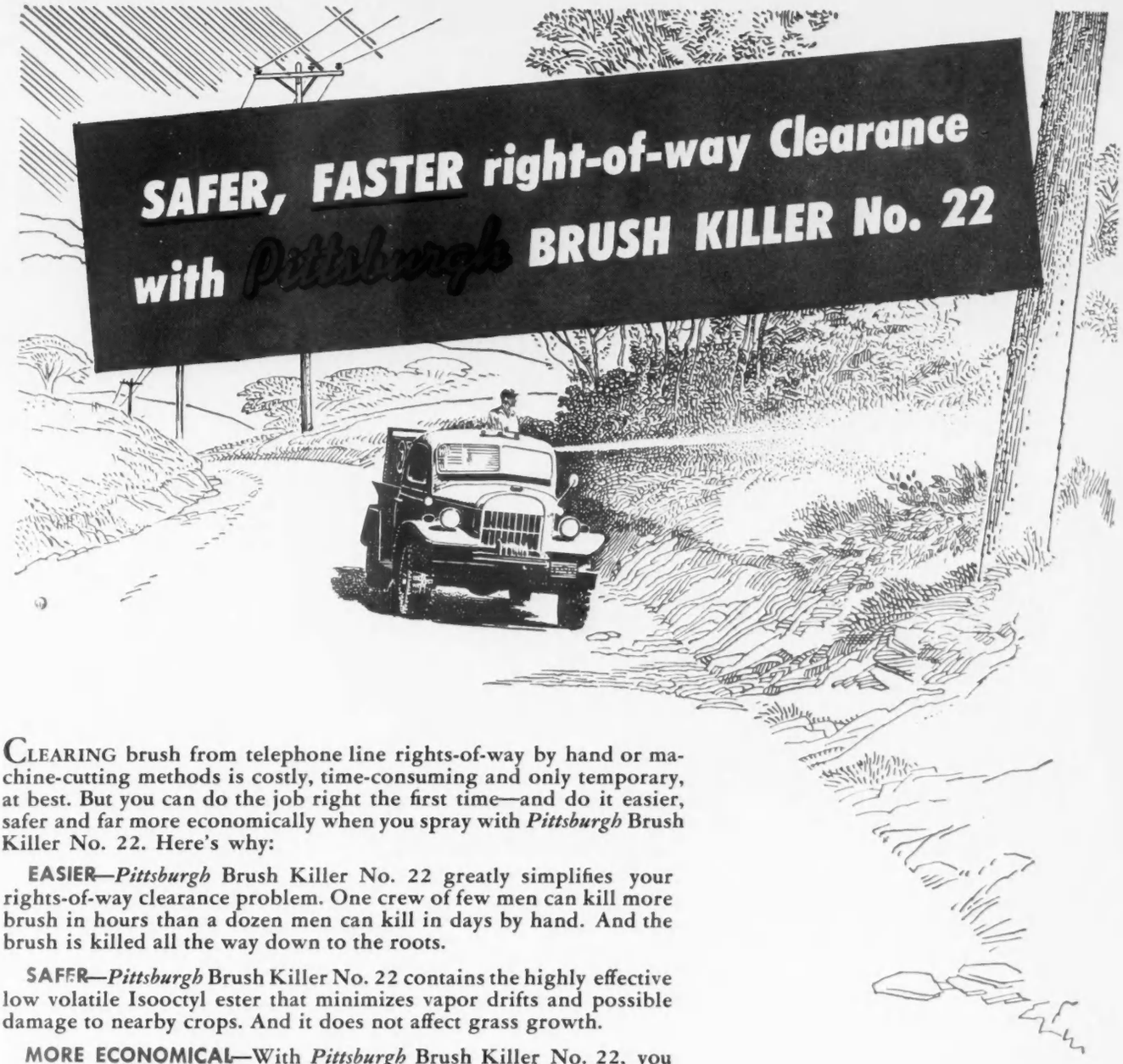
President Warren B. Clay of USITA, and Chairman William C. Henry of the Committee on Problems of Small Companies will represent the association and the Independent branch of the telephone industry. Staff Engineer Orla L. Moody of the American Telephone & Telegraph Co. is the Bell System's representative.

Other members of the committee are: L. E. Armfield, communications consultant, Fargo, N. Dak.; Glen Bergland, manager, Winnebago Cooperative Telephone Association, Thompson, Ia., who has been active in NRECA telephone activities and the establishment of the new REA telephone borrowers' association; John A. Brady, Sr., president, La-Fourche Telephone Co., Larose, Fla.; Joseph K. Galloway, vice president, Winter Park, Fla., Telephone Co.; James L. Capel, president, Champaign County, Ill., Telephone Co.; Daniel B. Corman, vice president, Northeastern Telephone Co., Louisville, Ky., a former REA consultant; J. Lee Keiger, Sr., president, Oldtown Telephone System, Winston-Salem, N. C.; Frank Richmond, manager, Twin Lakes Telephone Cooperative Corp., Gainsboro, Tenn.; Riggs Sheppard, manager, Medina Eelectric Cooperative, Hondo, Tex.; former REA Assistant Administrator; Jack E. Smith, manager, Mecklenburg Electric Cooperative, Chase City, Va., this year's NRECA president; C. J. Stover, manager, Skagit Valley Telephone Co., Mt. Vernon, Wash.; and C. R. Thiessen, president, Mid-Rivers Telephone Cooperative, Lambert, Mont.

83rd Congress

THE 83RD CONGRESS closed out its regular 1954 sessions after having passed a few measures of direct interest to the communications industry and shelving or not completing action on a number of others.

The bill to restrict government competition in business-type activities, after almost being enacted when the Senate Government Operations Committee reported it to the floor the day after it held hearings, died



SAFER, FASTER right-of-way Clearance with *Pittsburgh* BRUSH KILLER No. 22

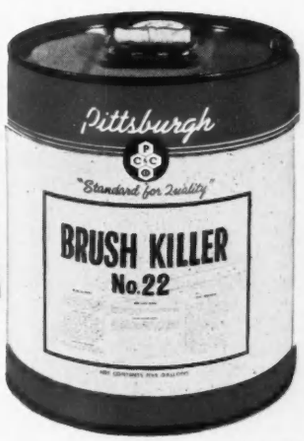
CLEARING brush from telephone line rights-of-way by hand or machine-cutting methods is costly, time-consuming and only temporary, at best. But you can do the job right the first time—and do it easier, safer and far more economically when you spray with *Pittsburgh* Brush Killer No. 22. Here's why:

EASIER—*Pittsburgh* Brush Killer No. 22 greatly simplifies your rights-of-way clearance problem. One crew of few men can kill more brush in hours than a dozen men can kill in days by hand. And the brush is killed all the way down to the roots.

SAFER—*Pittsburgh* Brush Killer No. 22 contains the highly effective low volatile Isooctyl ester that minimizes vapor drifts and possible damage to nearby crops. And it does not affect grass growth.

MORE ECONOMICAL—With *Pittsburgh* Brush Killer No. 22, you can clear your rights-of-way at far less cost per mile than by hand or mechanical methods. And cleared rights-of-way enable your maintenance crews to cover more miles per day, with savings in labor and equipment. ● Write today for complete details on *Pittsburgh* Brush Killer No. 22.

Standard for Quality



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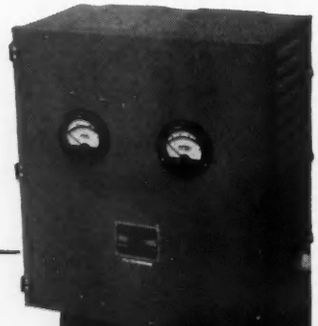
You can be completely carefree about battery charging with Raytheon RectiChargeRs on the job. They go on year after year following the load automatically — maintaining constant voltage output over the entire load range — keeping batteries fully charged — prolonging battery life by preventing over or undercharging — and require routine inspection only once or twice a year.

Striking proof of dependability is shown in the results of tests made on a RectiChargeR after 15 years of continuous service. Engineers found it as good as ever — not the slightest impairment of electrical qualities — no mechanical deterioration whatever.

In fact there's no reason it couldn't go on for many more years giving the same trouble-free service.

Dependability counts heavily in the Telephone Industry — one reason why Raytheon RectiChargeRs are so widely used.



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RAYTHEON PRODUCTS INCLUDE: RectiChargeR* battery chargers; RectiFilteR* battery eliminators; Voltage stabilizers (regulators); Transformers; Tubes and other electronic equipment.

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Specify Raytheon RectiChargeRs and RectiFilteRs for completely dependable Telephone service. Your supplier offers a complete line for all requirements. Ask him for details or write direct.

on the vine in tthe last-minute rush to adjournment.

It is expected that the question will be one for early consideration in the next session of Congress, although of course all legislative predictions for next year must be couched with a familiar "if"—they depend to a substantial degree on who gets elected in November, and which party controls Congress.

Also disappearing in the closing sessions was the bill to exempt radio equipment for non-entertainment purposes, and all radio components, from the manufacturers' excise now imposed on most radio items. Passage of such a bill should reduce the costs of radio equipment purchased by common carriers and other suppliers of communications services, public or private.

As the excise removal plan was tied to a rather popular proposal—reduction of the excise tax on ultra high frequency television receivers, to give the struggling UHF television service more of a break—it is likely that more will be heard of it next year.

Another subject which almost assuredly will be brought up again for discussion on Capitol Hill is the plan to raise the ceiling on securities registrations with the Securities & Exchange Commission, approved by the Senate this year but defeated in the House. The present requirement that full registration formalities be carried out by firms issuing more than $300,000 in new securities in a year is regarded as unduly burdensome on small companies, such as Independent telephone firms, and the Senate bill would have boosted the limit to $500,000.

Legislative casualties for this year, and possibly for years to come, were proposals to outlaw the interstate transmission via communications facilities of gambling information, and to authorize the use of evidence obtained through wire-tapping under certain conditions. Substantial opposition to both measures has been evident in the past, although it has not come to the surface in connection with the gambling measure.

New social security legislation, with the immediate effect of raising both benefits and payroll taxes, was approved by Congress as one of its last actions before adjournment.

—know your commissioners

Meet

Hon. Joseph J. Brown

***SEVENTH** of a series of articles introducing members of state and national regulatory commissions and officers, directors and chairmen and committee members of the National Association of Railroad & Utilities Commissioners.*

TO THOSE students who habitually stay at or near the top of their classes, you naturally ascribe a thirst for knowledge and the higher education. But Joe Brown — now Honorable Joseph J. Brown, Chairman of the State Railway Commission of the state of Nebraska — makes no bones about his motives in working hard enough to be among the top ten percent of his University class.

The top ten percent, it seems, was not required to pay tuition fees, and to a fellow who is paying his way through college by sweat and toil, a dollar saved is a dollar earned!

But this man Brown has never been afraid of work by either head or hands — as is attested by the variety of his labors during the process of equipping himself for the legal profession. Farm hand; railroad section hand; worker in mills — both flour and concentrating. Miner; coal and quartz. Clerk in a bank; salesman of law books; country school teacher; city attorney. And other jobs, but always with one distinguishing pattern — each successive line of work took Joseph Brown up a step or two in the scheme of things.

Even though born in Iowa, Mr. Brown is in reality a Nebraskan, to which state his parents took him when he was very young. He is a graduate of the College of Law of the University of Nebraska. After practicing law in Missouri and Nebraska, he joined the staff of the Nebraska State Railway Commission as an examiner and inspector in the Motor Transportation Department, and later became Chief Inspector and Director of that Department.

The Honorable Joseph J. Brown is Chairman of the Nebraska Railway Commission.

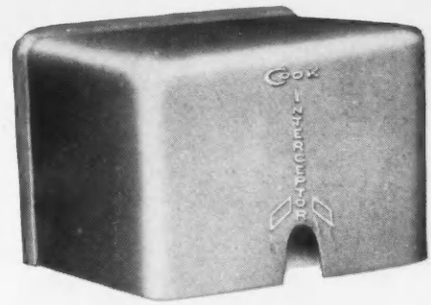
In 1943 he became Secretary of the Commission, and in 1952 he was appointed a Commissioner to fill an unexpired term. In the November, 1952 elections he was elected a Commissioner for a full six year term, and was made Chairman of the Commission.

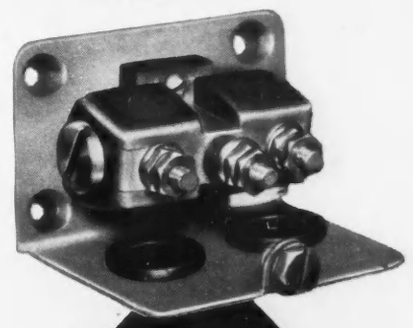
The Browns live in the capital city of Lincoln. Mrs. Brown is a member of the faculty of the University of Nebraska, in the Home Economics Department.

The three sons of the Brown family have all seen military service. The eldest son is engaged in the practice of law in the state of Oregon. The second son is in business, and the youngest, following in his father's footsteps, is a student of the College of Law of the University of Nebraska.

The daughter is married and lives in Colorado.

The family admits that, in his leis-





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The new Interceptor is designed for static drain, lightning and power surge protection.

Sealed MINIGAPS are screw mounted in bakelite with ground stud and bussed circuits insert moulded. The protector unit is enclosed in all metal corrosive resistant housing with grometted bracket.

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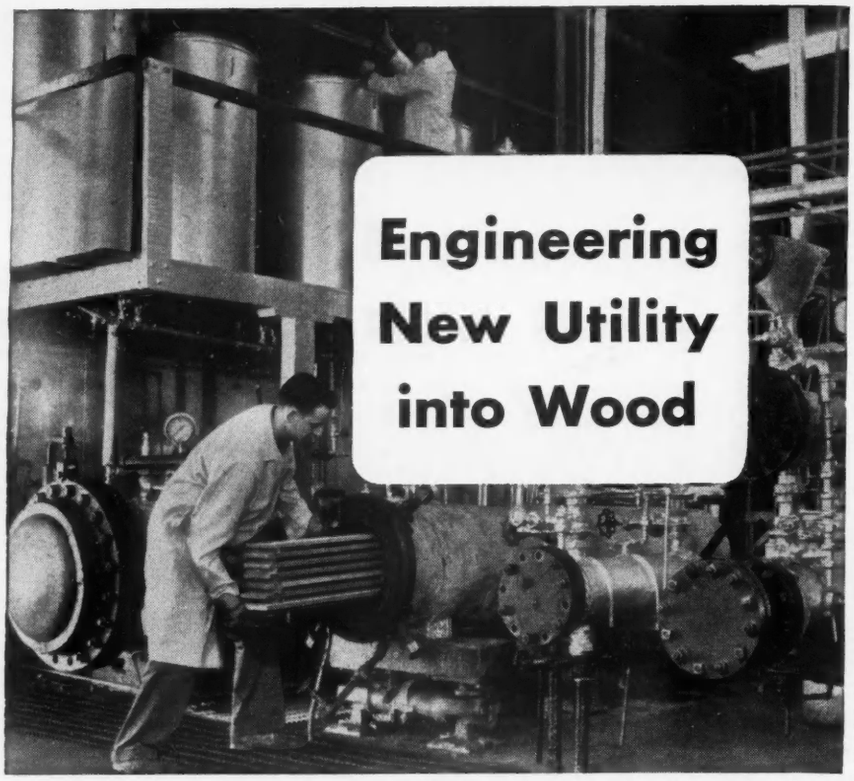

These wood-treating cylinders vary in size from 2" x 12" to 4' x 20'. They make possible detailed studies of wood ranging from test-tube quantities to semi-commercial quantities.

at the Koppers Technical Laboratory

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Here, in one of the most complete wood-treating laboratories in the world, Koppers technicians conduct exhaustive tests on the prevention of wood deterioration. They have the most modern equipment at their disposal.

For example, a man-made "tropical jungle" accelerates the rate of decay in wood and thus provides samplings for study. Impact-testing machines determine the loss of strength caused by the various agents that attack wood. There is a battery of pressure cylinders for impregnating wood with various preservatives and for testing all known treating procedures.

This continuing program of research is another way in which Koppers is hard at work to make wood serve you better and more economically.

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If you have any problems dealing with wood, submit them to us. Our technicians will then recommend the proper preservative treatment to meet your needs. If you wish, you can send us a sample of wood that has failed. We will perform an "autopsy" and tell you *why* it failed and how to prevent future trouble.

KOPPERS COMPANY, INC.

KOPPERS **PRESSURE-TREATED WOOD**

® Wood Preserving Division, Pittsburgh 19, Pennsylvania

ure moments, the Honorable Joseph does a reliable job of keeping the yard manicured and the shrubbery in place and form. He is also said to be some shakes at doing over furniture, even to the extent of manufacturing a piece now and then.

Mr. Brown is a Republican; a member of the Congregational church; member of the Masonic orders, including the Shrine, a member of the Elks and Eagles. He also does his bit in the work of the Rotary Club and that of the Lincoln Chamber of Commerce.

An old-time telephone man once said to us: "Commission regulation is in reality Commissioner regulation, since it is the commissioners as individuals who interpret their regulatory laws and also interpret the economics of the situation. Give us commissioners who think soundly on both law and economics and we will have sound regulation, good for both the utilities and the public they serve."

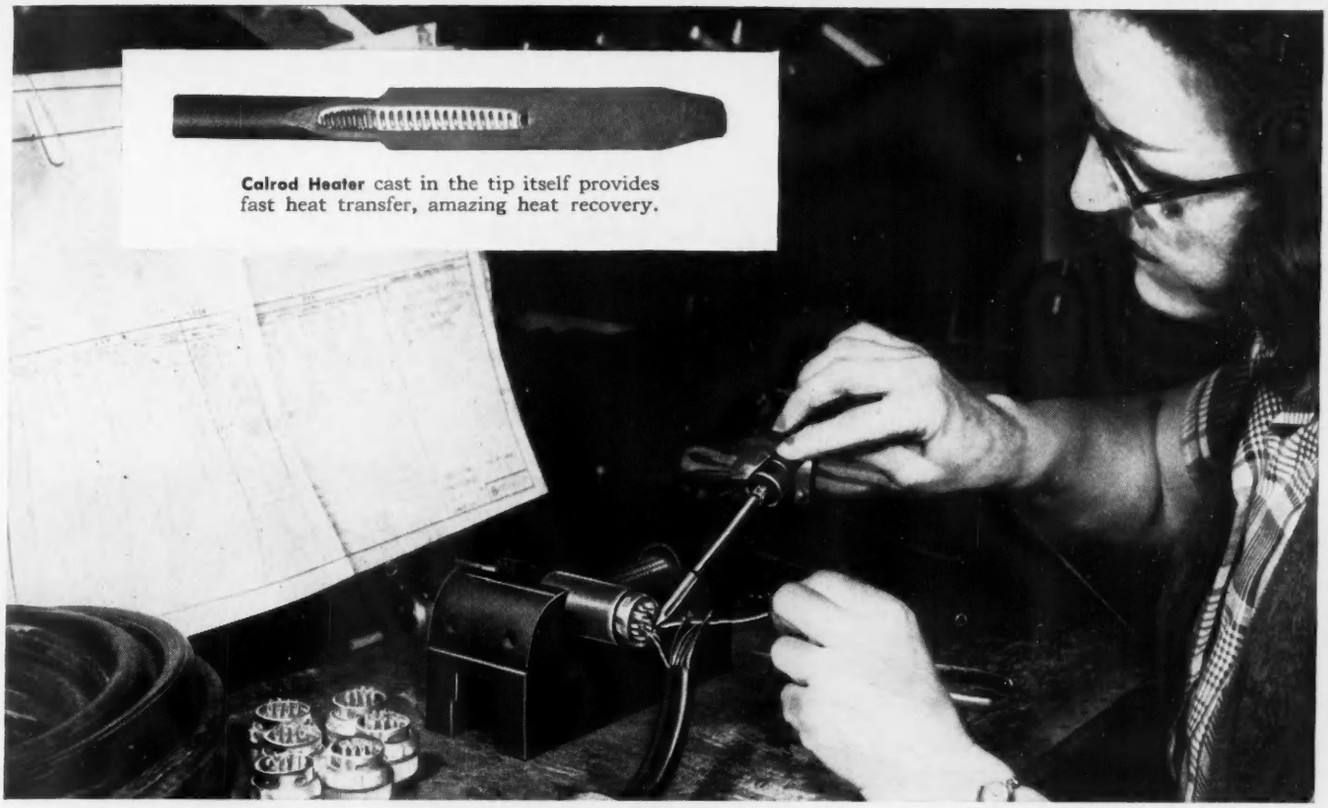
As to our friend, the Honorable Joe Brown — we put him in the sound-thinking class.—THE END.

New REA Booklet on Pre-Loan Procedure

FOR THE first time since the start of the rural telephone loan program, the Rural Electrification Administration has wrapped into a single package complete information on obtaining telephone loans.

A new booklet, "Pre-loan Procedure for Rural Telephone Companies," (REA bulletin 320-4) has been published and is now available upon request, REA said. A companion piece, "Pre-loan Procedure for Rural Telephone Cooperatives," (REA bulletin 320-1) is designed for cooperative-type applicants, and is also available.

Contents include a brief resume of the program which REA operates, instructions on how to make an application for a loan, and detailed information about the requirements which must be met by borrowers. There are sections on how to determine the area to be served, methods for determining the number of prospective subscribers, refinancing, incorporation, how to conduct an area coverage survey, pre-loan engineering, and engineering fees. Samples of forms which applicants will need are included in the pamphlets.



MIDGET'S SMALL-DIAMETER TIP with Calrod* heater cast in (see inset) is required here for close-quarter soldering. Fourteen delicate connections are soldered easily and quickly with the General Electric Midget iron. Three tip sizes are available.

Five Reasons why this Company is sold on the G-E Midget Soldering Iron

A. E. FINGERHUT, PLANT SUPT., PICKER X-RAY CORP., SAYS:
"We use General Electric soldering irons one-hundred percent. For close quarter soldering of electronic and x-ray components, we use the G-E Midget and we're completely sold on it."

1. "We're saving the replacement costs." Since switching to the G-E Midget five years ago, Picker X-Ray hasn't had a heating element burn out. That's because the Midget offers a long-life Calrod heater installed in the tip.

2. "We're saving maintenance time." Because the G-E Midget is equipped with a durable Ironclad tip, Picker X-Ray operators have eliminated tip filing. As a result, the company saves twenty to thirty minutes per day per operator in maintenance time. A Midget iron equipped with an Ironclad tip will give service up to *ten times longer* than irons equipped with ordinary tips.

3. "We're realizing increased production." Weighing only as much as a pack of cigarettes, the G-E Midget helps boost Picker X-Ray's production because operator fatigue is reduced.

4. "We're cutting damage costs." Small diameter tips, $\frac{1}{4}$ in., $\frac{1}{8}$ in., $\frac{3}{16}$ in. available with the Midget enable Picker X-Ray operators to solder small connections without burning adjacent wire insulation.

5. "We're getting the right amount of heat." Too much heat from a soldering iron causes varying quality in soldered components. Picker X-Ray finds that the G-E Midget produces the right amount of heat for soldering delicate connections.

Picker X-Ray's experience shows how you can profit by using the G-E Midget soldering iron for precision soldering. And to meet *any* of your soldering requirements, General Electric offers twenty-four different irons with ratings from 25 to 1250 watts. Contact your General Electric Sales Office today for more information. And for a free bulletin on industrial soldering irons, mail the coupon below.

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Please send me Bulletin GEA-4519D, Industrial Soldering Irons.

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...and in your home

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- **Increased Transmitting and Receiving Efficiency**
- **New, Shorter Handset Features Improved Design**
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- **Fully Automatic Performance Controls**
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- **Improved Dialing Performance**
- **New Improved Ringer Design**

Write for Your FREE COPY of *this* K-500 Bulletin!

New, illustrated 12-page bulletin gives you complete technical facts on the exceptional performance of the Kellogg K-500 Telephone. Mail your request today!

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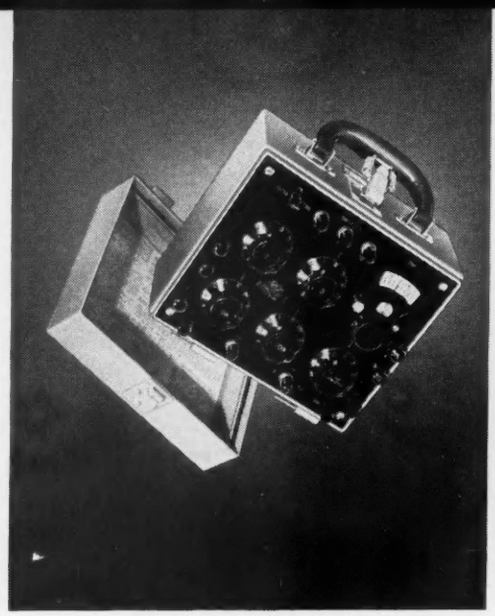
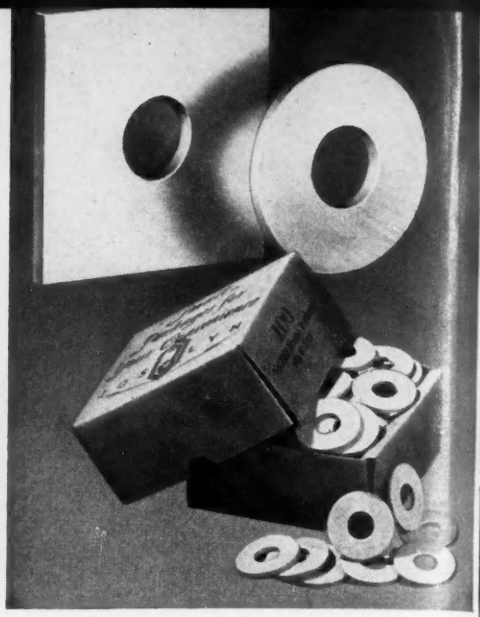
Versatile Plastic Screw Anchor meets needs of telephone industry. For use in all materials from plasterboard to concrete, indoors and out. Outstanding bonding and fusing action. No special tools required. Savings up to 70%. HOLUB INDUSTRIES, INC.

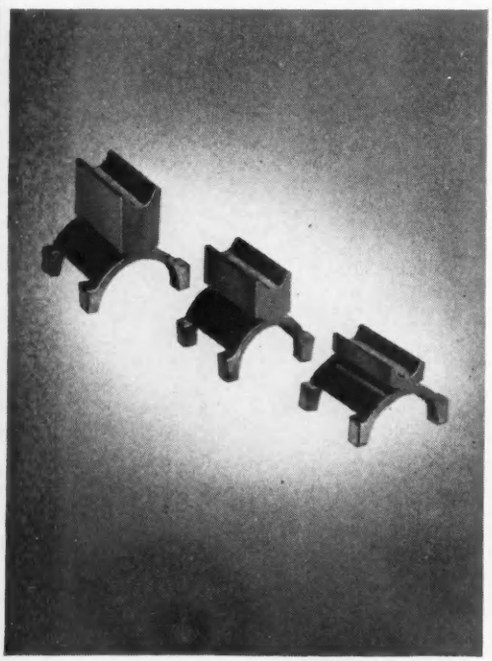


Locates grounds, crosses, opens and shorts by the Murray, Varley, Hilborn or Fisher Loop and Capacitance tests. Measures resistance from 1 ohm to 1 megohm. No. 6100 Wheatstone Bridge can be operated by repairman wearing gloves. SHALLCROSS MFG. CO.

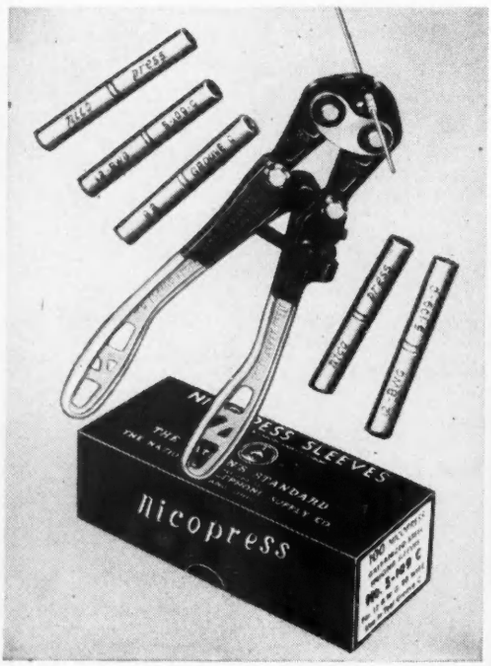


Complete Line of Hardware to meet all outside telephone plant requirements. Joslyn's convenient package of small hardware—like round washers shown above—promotes better "housekeeping" in the storeroom and on the line truck. JOSLYN.

Lead Cable Spacers used in lashed cable construction at poles and splices — provides separation between cable and strand. Lower concave surface bears against cable; upper surface against strand. Easy to use with any size cable. O. F. KINSEL & SONS.



Simple, Quick and Sure! For splicing two wires of different sizes, there's nothing simpler than using Nicopress reducing sleeves and the Nicoress 31-DC tool. Splices are always tight and strong. Made by the NATIONAL TELEPHONE SUPPLY CO.



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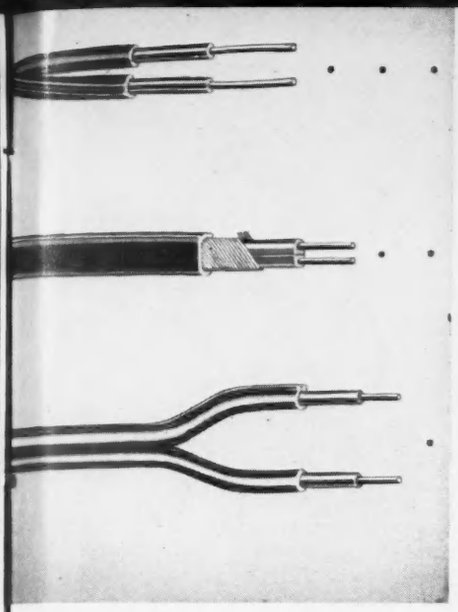
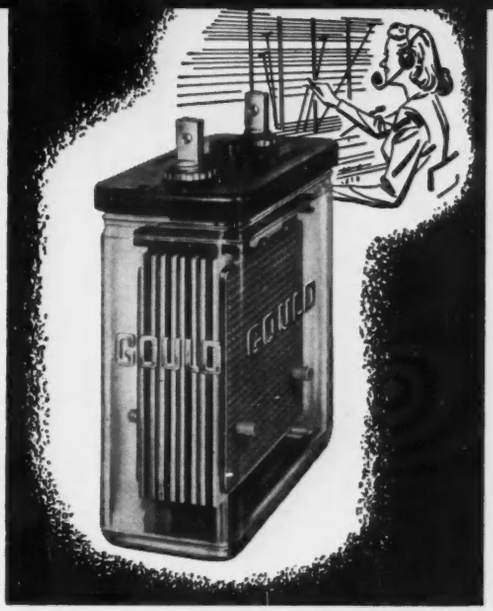


lines Need Replaced! Keep your maintenance and replacement costs down, with DIAMOND WIRE & CABLE CO.'S RED-D Drop Wire. Superior adhesion, conductivity, tensile strength. Available in Copperweld and Signal Bronze.

Exchange, Quadded and Composite: Type 775-P for Aerial and Duct Service, Type 775-AP Armored for Direct Burial, Type 775P-SS Self-Supporting using Channell Supports, Type 2094 to REA Spec. PE-14. The ANSONIA WIRE & CABLE COMPANY.



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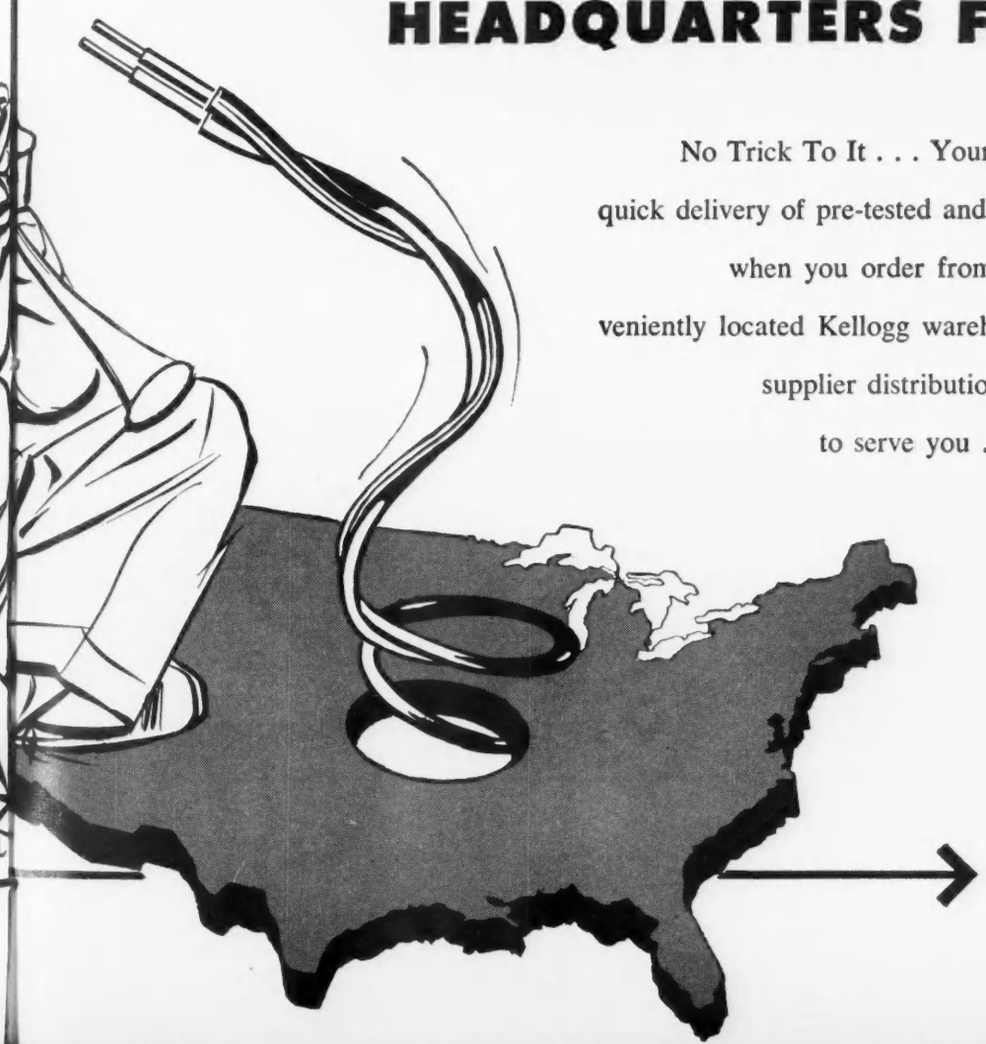

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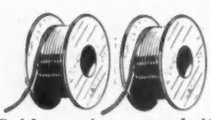

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Radio aids to air navigation . . . complete airport communications and lighting systems

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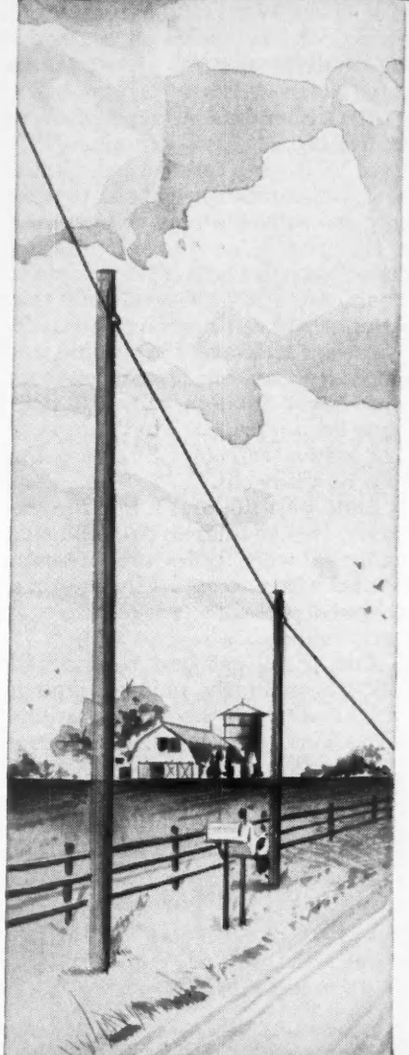
NEW SIX PAIR RURAL DISTRIBUTION CABLE

Polyethylene Insulated — Polyvinyl Chloride Jacketed Conductors

Completely Color Coded



EASY TO INSTALL

Light weight • Small size • Long lengths • Self-supporting • Full color coding

EXCELLENT ELECTRICAL CHARACTERISTICS

Low-loss transmission • Low capacitance • High dielectric strength

BUILT FOR LONG SERVICE

Polyethylene covered high strength steel core • Weather resistant • Electrically stable • Permanent, non-fading colors

This new six pair No. 19 AWG self-supporting rural distribution cable replaces six pairs of open wires for rural telephone distribution. Use of crossarms is unnecessary since cable can be attached to pole, making a neat, inconspicuous installation and reducing the amount of trimming required in wooded areas. On already crowded poles, capacity can be increased by six pairs by attaching this cable to the pole or the under side of an existing crossarm.

Also, excellent for use as multiple drop wire to small apartment and office buildings.

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High conductivity No. 19 AWG annealed copper conductors. High dielectric strength, weather-resistant polyethylene insulation. Color-coded polyvinyl chloride Plastite® jacket over each insulated conductor to an outside diameter of .096". Adjacent pairs are twisted with varying lays to avoid crosstalk. Color coding of pairs is: black-blue, black-red, black-green, black-brown, black-slate, black-yellow. Pairs are twisted around a core of polyethylene-covered, high strength, galvanized steel in above order. Steel core has 1800 pounds breaking strength. Polyethylene covering provides cushioning effect. Approximate outside diameter of cable is .500". Available in long lengths to make possible extensive runs without splicing.

Order some Whitney Blake Six Pair Rural Distribution Cable today. You'll find its low initial cost, ease of installation and long service life will help reduce your outside plant maintenance cost. The public will like its inconspicuous, neat appearance.

Well Built Wires Since 1899

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WHITNEY BLAKE COMPANY

NEW HAVEN 14, CONNECTICUT

Here's Proof of Performance...

Average annual replacement of Creosoted poles is only 1.3% on this 38-year-old line

● Keeping pace with the state's industrial expansion, the Georgia Power Company has invested 238 million dollars in new generating, transmission and distribution equipment since the end of World War II. The tremendous output of this expanded system is distributed to users on pressure-creosoted poles.

A. C. Henderson, supervisor of transmission lines, explains, "We have tried other types of poles in the past, but we always go back to pressure-creosoted southern yellow pine."

Experience has proved pressure-creosoted poles held replacements to a minimum. A 44,000-volt line near Atlanta has been in service since 1916. There are 1,159 poles in the line, and since present record-keeping methods were begun in 1942, only 166 poles have been replaced. That's an average annual rate of 1.3% on a line now 38 years old.

Long pole life and a low replacement rate like this can be confidently expected when poles are pressure-treated with Creosote—the preservative with *proved* records of long-term performance.

And you'll get best results with USS Creosote, the uniform product of United States Steel's tar distilling operations. For complete information, contact our nearest Coal Chemical sales office or write directly to United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

C. C. WHITE is inspecting one of the 38-year-old pressure-creosoted poles in the 31.6 mile line of the Georgia Power Company, between Norcross and Porterdale.

USS CREOSOTE

4-1872

UNITED STATES STEEL

EDITORIAL

Telephone Engineer

Don't Sell The Future Of Independent Telephony Short

NO DOUBT you are familiar with the story of the employe of the U. S. Patent Office who, in the early 1800's, quit his job because he saw no future in the patent business. Practically everything, he felt, had already been invented.

That was probably the all-time high for selling the future short. But it can still be done — if the seller is sufficiently pessimistic.

Through the years there have always been some who have believed and argued that the Independent segment of the telephone industry was on its way out. In support of their position they point to the fact — and it is a fact — that there are fewer Independent companies every year.

There is no argument about the decrease in the number of Independent telephone companies. At the beginning of 1944, for instance, there were some 6,700 such companies. Ten years later, at the beginning of 1954, the number had dropped to about 5,100 — a decrease for that period of some 1,600 companies.

But — as so often happens with statistics — these figures tell only part of the story. The fact is that all of this decrease in the number of Independent telephone companies was in companies operating fewer than 250 telephones.

The figures at hand indicate that several hundred of these small companies disappeared from the 250 station category by the simple process of growth. Presumably the remainder, hit by the rise in costs and expenses, were merged with or taken over by other and usually larger telephone companies.

The situation is that, during the ten year period named, there has actually been a small increase in the number of Independent telephone companies operating more than 250 telephones.

But of course the past, present and future status of the Independent part of the telephone industry is not measured by the number of companies in it. It is determined, rather, by the number of Independent telephones, and by such things as the amount of property involved, the amount of gross and net revenues, and so on.

It is common knowledge that there has been a phenominal growth in telephones in this country during the past ten years. That Independent companies shared in that growth is well known, although precise figures for all Independent companies are not available.

We do know, however, that during that period the amount of Independent telephone property in use reached and well passed the billion dollar mark. We also know that, during that period, the number of independent companies with average annual gross revenue of more than $100,000 increased from 152 to 271.

It has been estimated that, during the same period, the number of Independent telephones increased by 3,500,000 or thereabouts.

These figures are, we think, sufficient to prove that Independent telephone companies operate at present more telephone property and more telephones than ever before in their history.

That telephone growth will continue — although perhaps at a somewhat lower rate than that of the immediate past — no one seems to doubt. There is no reason to believe that Independent companies will not get their share of such growth.

In addition, Independent companies are modernizing, and are integrating into their systems such modern developments as carrier, radio and so on, at a rate faster than ever before.

We think that anyone who sold the Independent telephone industry short in the past must be having a terrible headache now. We think that anyone who sells the future of it short now is due for a colossal headache in years to come.

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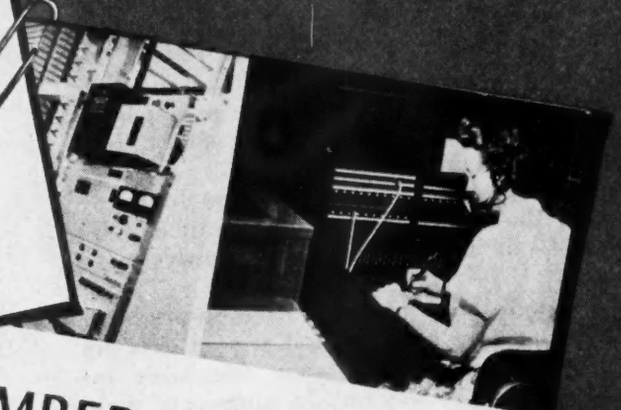
from

J.R. Commercial Manager

MEMO TO: M.V. Chief Engineer

Brown Mfg. is interested in a dial PBX for their main office. Traffic recommendations attached. What system should we recommend? J.R.

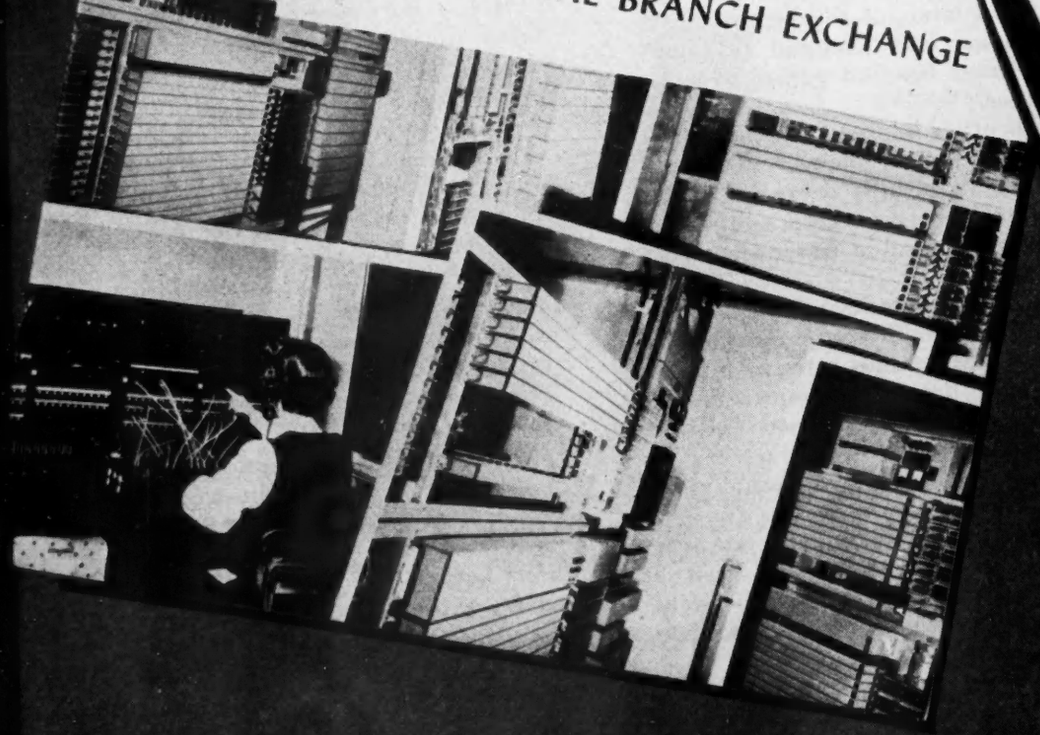
Joe: See attached. Believe it's the best. M.V.



STROMBERG-CARLSON

XY-PBX

PRIVATE DIAL BRANCH EXCHANGE



The most accepted dial system for central offices... is your best bet for PBX subscribers, too.

From the subscriber's viewpoint, almost any dial PBX offers similar, desirable advantages. But *you* have a big stake in this, too!

You want to install a system that is easily expansible, trouble-free—that incorporates the most flexible, interchangeable parts—that is easiest to get into, when maintenance is necessary.

That's XY-PBX! The Stromberg-Carlson XY system for central offices has had the fastest growth and greatest acceptance, since its introduction in 1947, among all dial-switching equipment. The same quality is built into XY-PBX's. For complete proof, write for copies of brochure T-III—the booklet shown on the opposite page.

Stromberg-Carlson®

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Atlanta 3, Ga., Chicago 6, Ill., Kansas City 8, Mo., San Francisco 3, Calif. Manufacturing Branch, Dallas.
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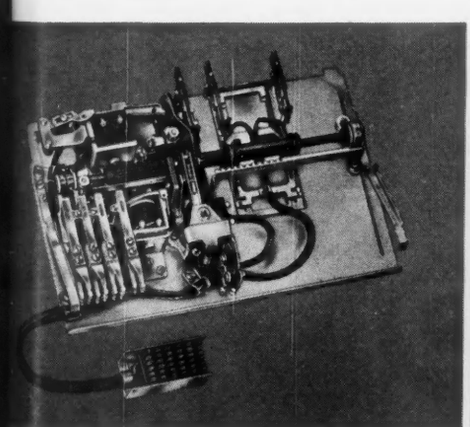
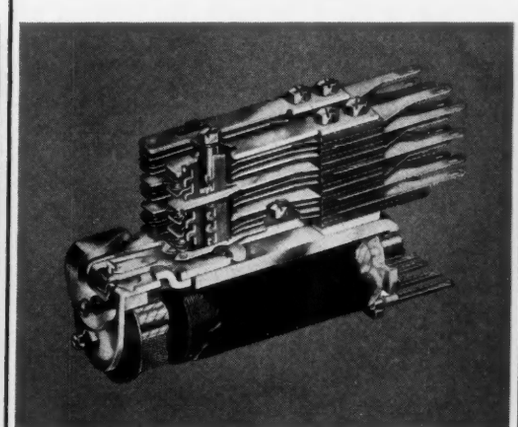
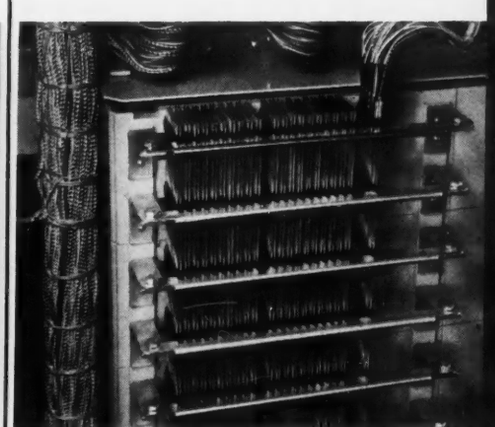


ONLY XY-PBX has the universal XY Switch, with twin wipers—completely and instantly interchangeable as a finder, selector or connector.



ONLY XY-PBX has the Stromberg-Carlson "A" type and twin "C" type Relays—with twin precious metal contacts and removable spring units.



ONLY XY-PBX has the Stromberg-Carlson Wire Bank Multiples which reduce soldered connections by a ratio of 1 to 10.

ONLY XY-PBX gives you all of these advantages of low first cost and trouble-free maintenance for years of service.

"It's no use...I'll never make it... the finish line is way up by the next pole."

• No wonder our exhausted athlete feels like giving up. Usually "the next telephone pole" isn't very far away. But these poles are strung with Amertel 135, and they're 2½ times as far apart as poles strung with ordinary BB wire.

Here's why it's a good idea to use Amertel 135. It saves work . . . requires less hauling, less digging, fewer man-hours of labor per mile. It saves money . . . you need fewer poles and less pole hardware, and your maintenance bills are lower. And it saves worry . . . the increased strength of Amertel 135 results in better service, fewer breakdowns.

We'll be glad to send you more detailed information on Amertel 135. Write to American Steel & Wire Division, Rockefeller Building, Cleveland 13, Ohio.

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U·S·S *Tiger Brand* AMERTEL

TELEPHONE & TELEGRAPH WIRE

USS

UNITED STATES STEEL

"TO KEEP UP with phenomenal company growth, our executives are going back to school to brush up on fundamentals and learn improved management techniques."

MANAGEMENT DEVELOPMENT

By E. S. GERMAIN*

IN VERY RECENT years management has reviewed and studied management itself with the result that one now finds courses conducted by universities called "Executive Development Programs." This in itself is somewhat startling when one considers the colossal achievements of American business enterprise from 1940 to date. Management of United States business from 1940 to 1945 built the equipment for the greatest Armed Force this world has ever known and in addition, supplied our Allies with many munitions of war.

Since the end of World War II some $200 billion have been invested in facilities to serve this country. We in the Independent telephone industry can be justly proud of our accomplishments. From 1945 to 1953 the number of telephones served increased from 5,500,000 to 9,300,000 and, in addition, we continued to improve service, convert exchanges from manual to dial operation, install some of the newest automatic toll ticketing equipment, and keep up with the technological advances of the industry.

With such a background of achievements, why does American industry find it necessary to send its people to Management Development courses? We propose in this article to find and analyze the reasons for this trend toward Executive Educational Programs.

One of the important fundamentals in the American Free Enterprise System is the basic principle that any product, method or system is always susceptible to improvement. We in the telephone business have followed as our creed "The best possible telephone service at the least cost to the public consistent with a fair rate of return to the investors." We can leave no stone unturned in our efforts to achieve this goal.

American business is spending millions of dollars every year in research and application of scientific methods to the improvement of production and operations. Unfortunately, it is not similarly applying its resources to discover how the most effective managers and supervisors function and how their principles and practices can be applied more generally.

Recent changes in social, economic, and political forces — the growth in size and complexity of operations, as well as the challenges of the future, all serve to emphasize the need for increasing the effectiveness and broadening the outlook of management people.

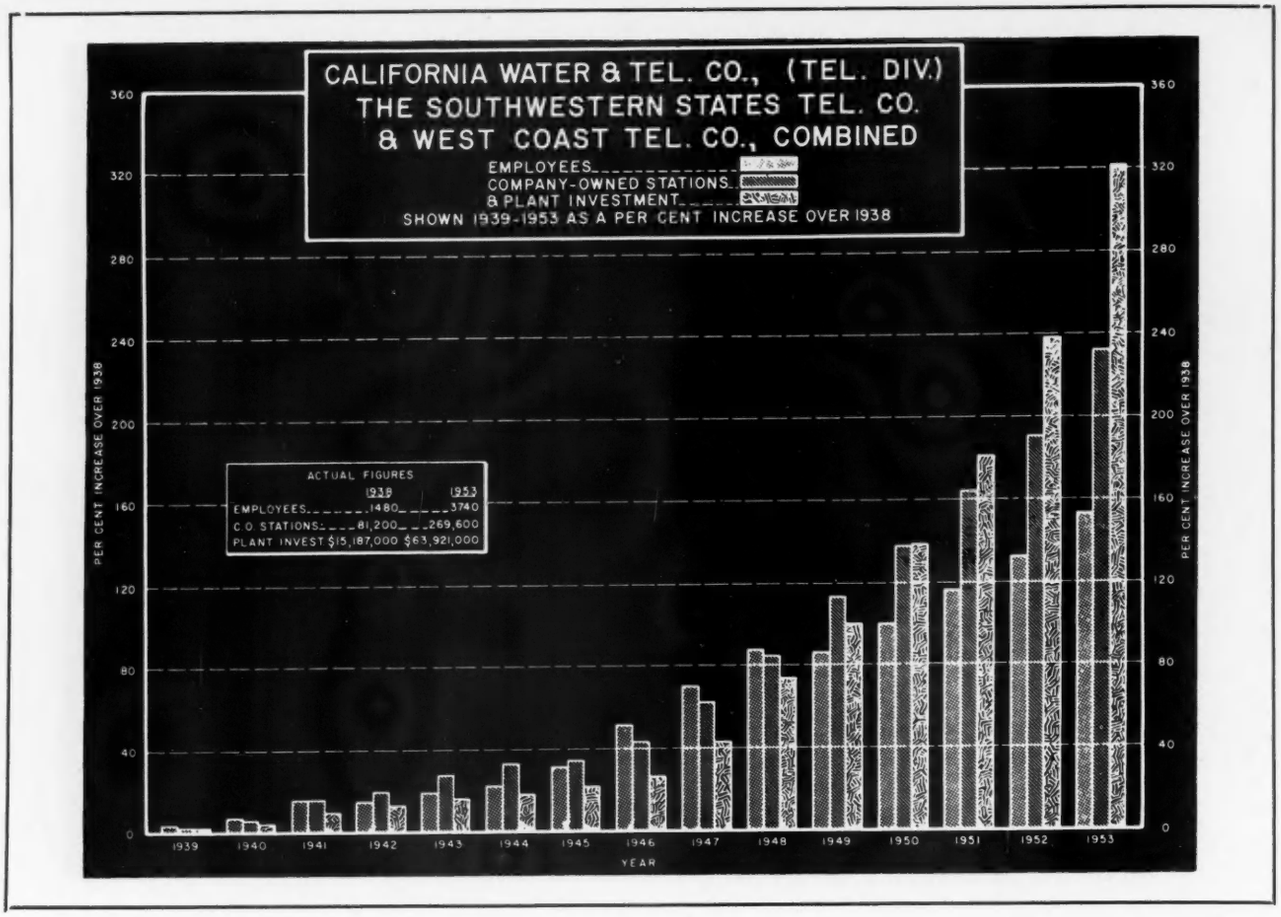
We believe it would be of interest to the industry generally if we portrayed the impace of these abnormal conditions upon our companies.

Through executive offices in San Francisco we operate three separate telephone companies, namely: California Water & Telephone Co. — the Telephone Division serves a portion of Southern California; The Southwestern States Telephone Co., which operates in Texas, Oklahoma, Louisiana and Arkansas; and the West Coast Telephone Co., which operates in the Pacific Northwest.

The growth of these companies from 1938 through 1953, with 1938 considered as a reference point, is illustrated by the chart on page 44.

This chart shows the percentage increases in employes, company-owned stations, and plant investment. By the end of 1953 employes had increased 154 per cent over

Mr. Germain is director of public relations for the California Water & Telephone Co., San Francisco, Calif.


CALIFORNIA WATER & TEL. CO., (TEL. DIV.)
THE SOUTHWESTERN STATES TEL. CO.
& WEST COAST TEL. CO., COMBINED
EMPLOYEES
COMPANY-OWNED STATIONS
& PLANT INVESTMENT
SHOWN 1939-1953 AS A PER CENT INCREASE OVER 1938
ACTUAL FIGURES
1938 1953
EMPLOYEES 1480 3740
C.O. STATIONS 81,200 269,600
PLANT INVEST $15,187,000 $63,921,000
PER CENT INCREASE OVER 1938
YEAR
0 40 80 120 160 200 240 280 320 360
1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953

1938. Stations had increased 232 per cent and plant investment had increased 320 per cent. In contrast to this, during the 8-year period from 1938 through 1945 the number of employes increased only 30 per cent. The number of stations increased 34 percent, and the plant and equipment in service increased 20 per cent.

The rapid increase in employes during the post-War period and the increased management responsibilities resulting from rapid increases of plant and stations required a tremendous augmentation of the management group.

All of these developments and general conditions have made it necessary for top executives to take a look into the future and analyze how these changing conditions and the new economy can be met in their operations.

Through experience in the difficulties of filling key management positions during this period of expansion, it was recognized that it was necessary to look for a method of management development.

What is management development as we know it today? One of the best definitions recently was stated by Mr. Virgil Rowland of the Detroit Edison Company:

> *"Management development is that part of the whole management job which has to do with the systematic supply, maintenance, and improvement of management personnel."*

So much has been written in the past few years about management development that it is now considered by some as a panacea. It has been interpreted by others as a "must." Still others think of it as a mass of ways and techniques which are too complex in which to engage. It therefore seems desirable to sort out ideas and principles as they may apply to our industry.

One important media for the training and development of executives is through seminars now being conducted by more and more American universities. During recent months several members of our organization have attended various universities. The results obtained were most gratifying and encouraging. It is true that all management personnel cannot attend such schools; however, with the proper dissemination of knowledge obtained from these courses all management employes gain through such a program.

It is readily apparent that any management development program must take into consideration that management is getting things done through people. Any program to succeed, therefore, requires the improvement of people.

Why not then consider a management development program and how it may be accomplished? There are two fundamental goals which may be stated as:

(1) *To improve the man's performance in his present position.*
(2) *To improve the man's capacity to assume additional responsibilities in the future.*

These two goals may be expanded further to include the improvement of people who report to them.

The economic aspects of a company form a most important part in any management development program. These may be called indices

and may be segregated into the following subjects:

(1) *Income available for common stock. Are we "net profit" conscious?*
(2) *Budget control.*
(3) *Cash control.*
(4) *Responsibility accounting, whereby expenses may be controlled by departments.*
(5) *Timed and economic adaptability, whereby we not only meet emerging demands as they occur, but also anticipate the future.*

Another index that should be considered in a management development program is that of human relations. This subject may be segregated into the following categories:

(1) *What are the attitudes and opinions of the employes?*
(2) *Are grievances increasing or decreasing?*
(3) *Is absenteeism increasing or decreasing?*
(4) *Is the turnover of employes increasing or decreasing?*
(5) *What is the company's safety record?*
(6) *Does teamwork exist among the employes?*
(7) *What is the record of productivity?*
(8) *Does the company have a well-organized social program?*

The answers to all of these questions may be determined by survey, research and evaluation, by conference discussion, by reports which may be received, by interviews, by company records and by observation.

Methods Used To Aid Management Development

IT MAY BE well to turn now to the methods which may be used to implement and meet the need for this management development in industries which have had a growth such as ours.

Exhibit One gives an outline for a management development program prepared at the recent Columbia University Utility Workshop Seminar.

Meet the Author

Born in Olean, N. Y. ERNEST S. GERMAIN, better known as "Brownie" in the industry, started his business career in sales following World War I. He progressed from manufacturer's representative in various sales and sales executive capacities and in 1941 was made Pacific Coast Division Manager of the Stromberg-Carlson Company's Radio-TV operations, which position he occupied until 1951 when he joined the Chester H. Loveland organization in his present capacity in personnel and public relations.

Incidentally, Ray Dalton, vice president and general manager of our West Coast Telephone Co. and past president of the U.S.I.T.A., was one of those in the task force that prepared this outline.

The program was divided into two headings, namely, "*What We Can Do*" and "*What We Need To Do It.*" (*See Exhibit One, Pages* 46-47.)

In addition to the policy of keeping the company employes informed, our executive group decided to expand the scope of management development which resulted in the establishment of two general types of courses:

(1) *Informative group meetings*
(2) *Education by management development courses given by universities*

The informative meetings were primarily designed for the dissemination of general information regarding company activities. This has proved very beneficial in assisting the company personnel in their communications with the public resulting in a better understanding on the part of the public regarding such things as prospective rate increases, the delay in providing service in certain areas and other problems.

During the post-War period our forces have done a remarkably fine job in meeting the problems with which they were confronted. We have endeavored to keep our supervisory personnel well-informed regarding the fundamentals of our business. They, in turn, have had better communications with their co-workers. Better informed employes are happy employes.

In the implementation of training through university courses, our company has sent a number of management people to participate in Managment Development Programs conducted at various universities and to a course on Human Relations given at the University of California and conducted by nationally recognized psychologists. Members of our management staff also have attended Executive Development Programs both at the University of Washington and the University of Michigan. The reaction to these courses has been most gratifying.

The previously mentioned Columbia University Utility Management Work Shop was attended by two other members of our Management team. This course emphasized the effective use of executive resources dealing specifically with the utility business. The areas explored by this program were:

(1) *What do executives do?*
(2) *Appraisal and evaluation of the man and the man on the job.*
(3) *Executive development.*

The courses given in various universities conducting executive seminars generally include such subjects as corporation finance, business conditions, general economics, including a study of the Federal Reserve System, marketing, production, accounting, labor relations, employe and human relations as well as general public relations. Most of these are very important to the development of management personnel in the telephone industry.

There are, however, certain other courses which would be very bene-

Please Turn To Page 47

EXHIBIT ONE:—Outline For Management Development Program

Prepared at Recent Columbia University Utility Workshop Seminar

A. What We Can Do

1. Formal Training and Education Programs

1.1 *Organized presentations*
- 1.11 Lectures by "experts"
- 1.12 Films, film strips
- 1.13 Demonstrations, role playing
- 1.14 Panels by "experts" — forum

1.2 *University cooperation*
- 1.22 Regular courses of study
- 1.23 Selected or specially designed courses
- 1.24 Organized studies of natural and available resources, i.e., — area of development — correspondence courses

1.3 *Industry Association*

2. In-Service Development

2.1 *Staff meetings* (all types)
- 2.11 Cross training for information
- 2.12 Shift or rotate meeting responsibilities and roles to develop staff leadership and membership skills

2.2 *On-the-job supervision, counseling and guidance*
- 2.21 Job rotation

2.3 *Temporary Committee assignments*
- 2.31 Special problem solving
- 2.32 Advisory rather than with power to act

2.4 *Permanent Committee assignments*
- 2.41 Types: operation, safety, education, et al.
- 2.42 Non-voting participation possible but of limited value
- 2.43 Probably good training for executive on-the-job rather than potential executive

3. Information Resources (Inside and Other)

A. Subject Areas Related to Goals

3.1 *Economic Resources*
- 3.11 Financial information
- 3.12 Operations information
- 3.13 Systems concepts information

3.2 *Human Relations Information Resources*
- 3.21 Sociological and anthropological information
- 3.22 Industrial psychology and relations literature
- 3.23 Social and individual psychology literature
- 3.24 Recreation and adult education

B. What We Need To Do It

1.1 *Organized presentations*

A. Types involving speakers and panels:
- a. Illustrated lectures
- b. Meaningful language
- c. Reliable knowledge
- d. Pre-viewed material
- e. Public address equipment

B. Types involving audience
- a. Discussion leadership skill
- b. Physical arrangements and equipment — tables, chairs, blackboard, newsprint
- c. Adequate time

1.2 *University cooperation*

A. Courses
- a. Content and procedures of courses reveiewed for meaningfulness and practicality
- b. Tuition refund provisions
- c. Design of special courses and conferences on selected critical topics
- d. Investigate instructor competency

B. Studies
- a. Potential executives gain experience through participation in area development studies carried on by the universities in neighborhood
- b. Purposes and value to the executive should be carefully reviewed in advance

C. Correspondence Courses
- a. Materials and lessons readable and practical
- b. Material directly related to job requirements
- c. Discriminate use and selection of courses and studies

1.3 *Industry Association*
- 1.31 Industry and professional publications and journals
- 1.32 Bulletins
- 1.33 Planned participation and audition in and out of industrial and professional meetings
- 1.34 Circulation of proceedings and reports among management not able to attend
- 1.35 Review reports for local implications

2. In-Service Development

A. Skills and resources for all types of meetings involving larger groups
- a. Skills in leadership and membership
- b. Effective planning and procedures for full participation
- c. Definite and recognized goals or objectives
- d. Recording and reporting provisions to record decisions and progress
- e. Proper timing, sequency of events and staging

B. Materials, Equipment and Physical Arrangement
- a. Related information should be comprehensible
- b. Physical arrangement should facilitate communications and participation
- c. Distributions of materials — full, and effective

3. Information Resources

A. Types of Media for Communications

What	*Need to Know*
1. Informational sources and services	1. How to discover
2. Technical books, magazines	2. How to use
3. Libraries	3. Cost to provide same for those who need it
4. Pamphlets	4. Report back what is available in a meaningful manner to those who need it
5. Films	5. Up-to-date
6. Letters, circulated, direct	6. Easy to see
7. Bulletin boards	7. Location and illumination
8. Exhibits	8. Planned
9. Meeting of employes	9. (See 2)

EXHIBIT ONE:—Outline For Management Development Program

(Continued From Opposite Page)

4. Conferences and Institutes
(Inside and outside the company)

- 4.1 *Management conferences*
  - 4.11 Quarterly or as desired
  - 4.12 Two or three days in length
  - 4.13 Economic conferences — time and cost
- 4.2 *Special University Institutes*
  - 4.21 Technical Schools
  - 4.22 Labor-management institutes
  - 4.23 Safety institutes and conferences
  - 4.24 Seminars
- 4.3 *Community affairs*

4. Conferences and Institutes
(Inside and outside the company)

General Applications to all

- A. *Management*
  - a. Promotion
  - b. Financing conferences
  - c. Registration
  - d. Housing et cetera
- B. *General or Plenary Sessions*
  - a. Well thought out designs of objectives and procedures
  - b. Staff responsibilities for planning and staging of general sessions
  - c. Preparation and orientation of "guest" resource persons
  - d. "Dry run" and rehearsal of general sessions
- C. *Small Group Planning*
  - a. Skill training for small group leadership
  - b. Planning and skills for full participation
  - c. Provisions for reporting and recording
- D. *General Coordination of Records*
  - a. Preliminary and post polling of suggestions, evaluations, etc.
  - b. Digests of reports, findings and decisions
  - c. Planning for overall reports
- E. *Social Program*
  - a. Scheduled activities
  - b. Provide for fellowship in program
  - c. Provide for change of pace from time to time

5. Informal Group Discussions

- 5.1 Supervisory safety meetings
- 5.2 Managers' meetings for cross training and exchange of ideas for planning
- 5.3 Inter-department group meetings
- 5.4 Preparatory and planning meetings for — budget systems, etc.
- 5.5 Special community responsibilities

5. Informal Group Discussions

A. Planned informal group discussions

1. Problem centered
2. Time schedule — so participants know what to expect
3. Plan realistic goals
4. Be sure all affected persons are involved
5. Establish a climate for communications
6. Awareness of how the participants feel, and their attitudes

B. Casual informal group discussions

1. Discover what time and other pressures are on participants
2. Focus and clarify the problem
3. Discover readiness, "mood," attitude

ficial to the personnel of the telephon industry that are not given in these general Management Development Programs. There are Seminar programs designed for the Utility Industry but they do not appear to meet the requirements of our industry. Some companies believe that the General Management Development courses are better training media than specialized courses. Usually however, these companies supplement these courses by teaching the specialized phases through other means.

One of the significant facts learned by our group in attending courses in Human Relations was that a person must be able to understand himself before trying to understand others. Another major objective of a good Human Relations Program is to have the participant take a look at himself and evaluate his relations as they affect others.

In any program, emphasis should be put on the benefits to be gained by the participant through self-improvement which effects the welfare of his family, community, and company. It has been stated by Dr. John W. Riegel of the University of Michigan that "You don't develop management people — they develop themselves. Management cannot instill the self-motivation required but it can aid in nurturing it. Executive development should not be concerned only with preparing men for higher jobs, but emphasis should be on helping them to do their jobs better."

The numerous universities now offering executive courses employ various teaching methods or combination of methods, such as seminar type, lecture, discussion, case method or role playing (student participation). The discussion of problems that develop when a group of executives are together proves most stimulating to the group and also to the instructor. In the case method actual problems are assigned for study and analysis prior to class meetings. During classes the discussion of the various possible solutions cause excellent participation. The objectives of the role playing type are twofold, first, it tends to give the participant more poise and confidence; second, it attempts to put the class in the position of observing an actual situation or problem in the process of being resolved. The participants in these university courses normally range from an average of 38 to an average of 48 years of age.

Please Turn To Page 84

"Maintenance of proper clearances should never be neglected."

Measuring Cable and Wire Clearances

By JOHN S. REED

HERE'S HOW to maintain adequate clearances for telephone lines. Part One of this 2-part article discusses minimum ground clearances for telephone lines and at wire crossings.

THE MAINTENANCE of adequate clearances for telephone lines has always been a problem for plant men, particularly in the case of lines crossing over roads or in proximity to power lines. This article discusses different clearance requirements and methods of measuring wire clearances in various situations.

Rules have been established for clearances of telephone and power wires as well as telegraph and railway signal wires in various crossing situations. These rules are embodied in regulations issued by state regulatory bodies and municipal authorities. In most states, the clearance rules conform to the specifications of the National Electrical Safety Code or else are more stringent. It is the obligation of telephone companies to maintain the minimum of greater clearances for their lines with respect to the ground level and to cooperate with other utilities in providing the requisite separation of lines of different companies at crossings and in joint use.

Minimum Ground Clearances for Telephone Lines

THE BASIC minimum vertical clearances for telephone open wires and drops in various crossing situations are given in Table 1. The clearances in this table apply to spans of not more than 175 feet long in heavy loading, 250 feet in medium loading and 350 feet in light loading districts. For span lengths over the maximum, the National Electrical Safety Code specifies that the minimum clearances shall be increased 0.1 foot for each 10 feet increase in span length over the maximum. This increase is made necessary by the fact that wire sags in the longer spans will vary to a greater extent with temperature changes than in the shorter spans.

The National Electrical Safety Code prescribes that minimum vertical clearances shall be maintained with the final unloaded sag at 60 degrees F, no wind, meaning the permanent sag resulting from application of storm loading.

As indicated in *Table* 1, the height at which the line wires should be placed depends on the clearance requirements called for by the type of the crossing.

If the wires parallel a roadway which has a fence, ditch or embankment along the route of the pole line that would prevent the passage of loaded vehicles under the wires into the field, the minimum clearance would be shown in *Figure* 1. If the roadside is relatively level and

no obstructions to vehicles are present, the minimum clearance (basic) is 14′0″ as illustrated in *Figure* 2. The 13′0″ minimum clearance is prescribed for a similar situation but with the condition that no part of the line overhangs the road and that there is little or no chance of loaded vehicles attempting to turn off the road into the field.

The basic 8′0″ clearance indicated in *Figure* 1 may be too low where there is only a fence to obstruct passage into the field. Large farm machinery such as combines or corn pickers have projecting elevators or chutes that may tangle with the telephone wires when the machine turns at the edge of the field. In such cases, it is desirable to provide the minimum of 14′0″ clearance for the telephone lines. A similar problem exists in the case of lines passing over a private right-of-way on farm land or a spur line on farm property to the residence. *Figure* 3 indicates the desirable wire height in this situation.

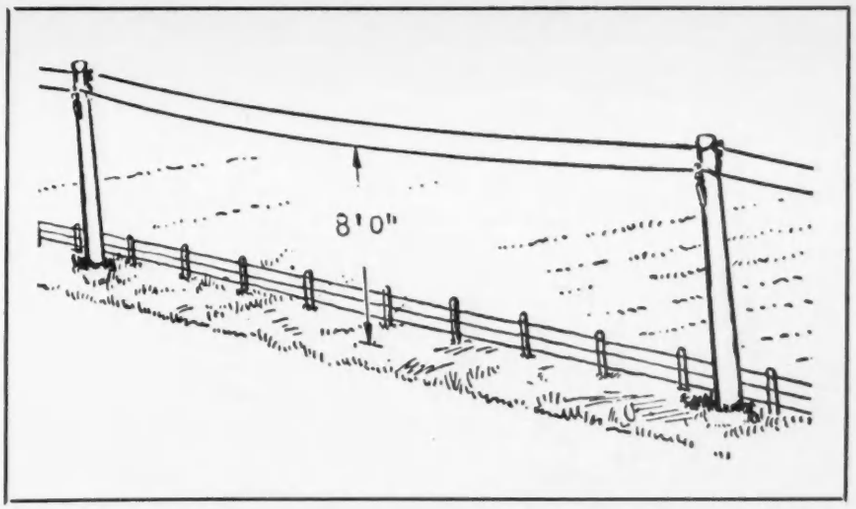


FIGURE ONE: — The minimum basic clearance may be 8 feet as shown when roadside ditch, fence, or embankment would prevent passage of loaded vehicles into the field.

For wires crossing over roads, the minimum height permitted by the National Electrical Safety Code is 18 feet as illustrated in *Figure* 4. At railroad crossings, the minimum height allowed for line wires is 27 feet, though the Code allows a minimum of 25 feet for telephone cable crossing the tracks. *Figure* 5 shows the clearances required for telephone open wire. Maintenance of proper clearances of telephone wires and cable over roadways and railroad tracks should never be neglected.

TABLE ONE—Minimum Vertical Clearances of Telephone Wires, Cables, Drops and Guys Above Rails

Nature of Ground or Rails Underneath Telephone Wires Cables, Drops or Guys	Telephone Line Crossing Above Ground or Rails	Telephone Line Paralleling Traveled Way
Top of railroad track rails	27 Ft.*	
Roads or driveways in urban or suburban district ***	18 Ft.**	18 Ft.
Roads or driveways in rural districts	18 Ft.**	14 Ft.
Roads in rural districts where no part of the line overhangs part of the highway ordinarily traveled and where it is unlikely that loaded vehicles will cross under the wires into the field		13 Ft.
Roads in rural districts where a pole line is located relative to fences, ditches, embankments, etc., so that the ground will never be traveled except by pedestrians		8 Ft.
Spaces accessible to pedestrians only	8 Ft.	
Driveways to residence garages	10 Ft.	
Pole to pole guy		8 Ft.
Anchor guys not crossing streets, driveways, roads, pathways, or anchor guys provided with traffic guards and paralleling sidewalk curbs		None Required

***This value may be reduced to 25 feet for guys and for cables carried on messengers.*
****If a telephone drop, or a guy which is effectively insulated against the highest voltage to which it is exposed, up to 8,700 volts crosses a street, alley or road, the clearance may be reduced to 16 feet at the side of the traveled way.*
*****Where telephone wires or cable cross over or run along alleys, this clearance may be reduced to 15 feet.*

Minimum Clearances Required at Wire Crossings

REQUIREMENTS for minimum clearances between communication and electric-supply lines at crossings, are specified for the following conditions:

(1) Supply wires in the upper position.

(2) Temperature at 60° F, no wind, with final unloaded sag in the wires of the upper supply crossing line and initial unloaded sag in the telephone wires below. (Note: Initial unloaded sag is the original stringing sag before storm loading is applied. Final unloaded sag is that sag resulting when newly strung wires are stretched for the first time under storm loading, resulting in a permanent sag greater than the original stringing sag.)

(3) Span lengths of the supply wires in the upper position, not over 175 feet in heavy loading districts, 250 feet in medium loading district, and 350 feet in light loading district. (Note: When supply lines consist of 3-strand conductors with 0.09 inch or less diameter strands, the minimum span length shall be 150 feet in the heavy loading district and 225 feet in the medium loading district.)

(4) Supply line voltages of up to 50,000 volts between conductors.

(5) Fixed insulators for the over-

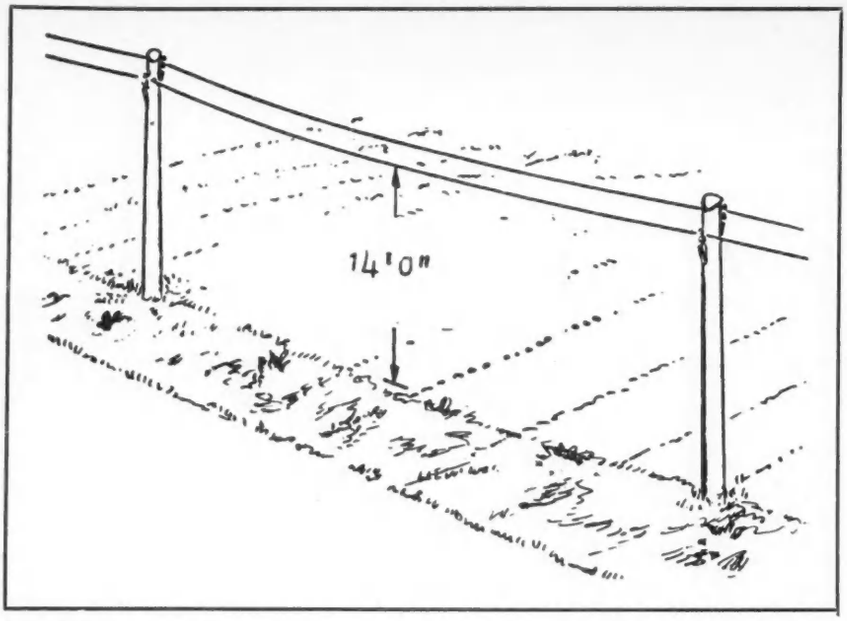


FIGURE TWO: — In the situation shown, it is possible to drive vehicles and bring farm machinery into the field from the road. This means the wire height should not be less than the minimum shown.

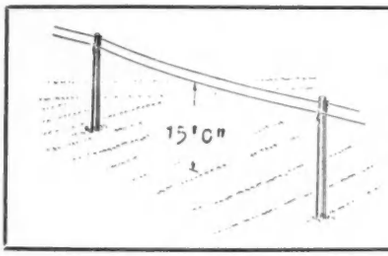


FIGURE THREE: — Lines over a private right of way should have the minimum clearance shown even though N.E.S.C. regulations permit 8'0" minimum, to provide clearance for farm machinery.

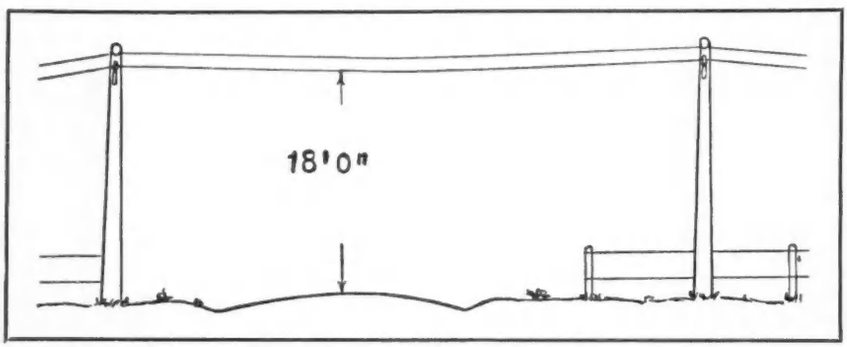


FIGURE FOUR: — Clearances over roadways must not be less than 18'0" minimum indicated as required by the N. E. S. C.

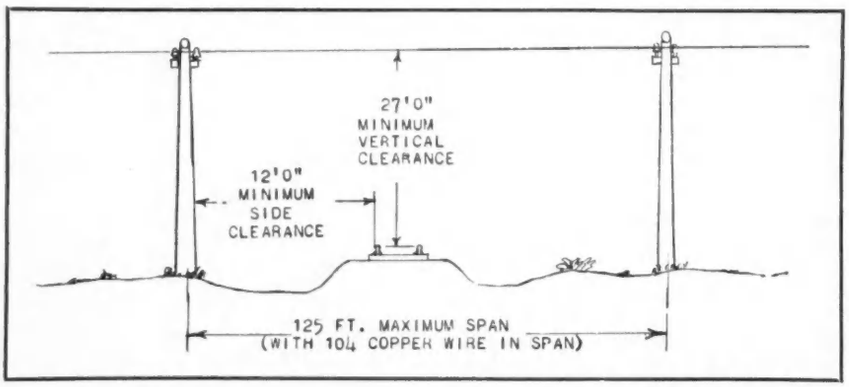


FIGURE FIVE: — Railroads are particular about wire heights over their tracks as well as side clearances and the kind and size of wires strung over the crossing.

head supply line, and heavier grade of construction than in the rest of the line is used.

Minimum basic vertical clearances of telephone and cable from supply lines are listed in *Table* 2. This table is based on requirements specified in the National Electrical Code. (The same clearance requirements apply to telephone cable, measurements being made between the top of the cable messenger and the lowest wire in the supply level above.)

The clearances specified are minimum basic clearances, which must be observed. It is well therefore to allow more clearance than actually needed in all cases where possible to make sure that the requirements are met at all times.

Situations Requiring Increases In Minimum Clearances

IT IS necessary to provide greater than the basic clearances specified in *Table* 2 under the following conditions, as outlined in the National Electrical Code.

(1) Crossing span longer than the maximum specified for the loading district involved.

(2) Voltages exceeding 50,000 volts between conductors. In this case, the clearances given in the table shall be increased ½ inch per 1,000 volts over 50,000 volts.

(3) Supply conductors supported by suspension-type insulators at crossings over communication wires. (Power companies are required to provide the proper type of insulators at wire crossings, as specified in the Safety Code, or increase the clearance of their wires from the communication lines to avoid a dangerous decrease in the clearance in event of a wire break elsewhere. Whenever possible, the insulators on the supply crossing poles should be of the fixed type. Alternatively, however, the power company may use semi-strain type insulators at both supports, suspension strain insulators in a suspended position at both supports, or an arrangement of insulators to restrain them from displacement toward the crossing.)

The increases specified are cumulative when more than one of these conditions occur together in the same location.

The method of determining the increase over basic clearance as outlined in the National Electrical Safety

Code involves considerable arithmetic and is hardly satisfactory for field computations. Power companies, however, have prepared tables to show how the proper clearances may be determined in a comparatively simple manner. The method for computing clearances between various types of lines at a crossing is as follows:

(1) Measure the span length of the upper crossing conductor.

(2) Measure the distance from the crossing point to the nearest pole supporting the upper conductor.

(3) Ascertain the size and type of supply conductors at the crossing from the power company and consult *Table* 3 to determine whether the conductors are large (A) or small (B).

(4) Referring to *Table No.* 3, locate the section corresponding to the span length and under the first column locate the figure corresponding to the pole-to-wire-crossing distance, or the next higher figure, if the measurement lies between two figures in this column.

(5) Under the column heading corresponding to the type of supply wires at the crossing (service drop, messenger, or guys, and conductor size (A or B), the minimum required clearance for the particular crossing situation will be found.

The following example illustrates how this method is employed in a typical case of a high voltage supply line crossing over a telephone line. Assume that a 13,200-volt single-phase supply line crosses over a telephone open-wire lead. The span length of the supply line is 250 feet, and the distance from the point of crossing to the nearer supply pole is 95 feet. The supply conductors are No. 2 solid Copperweld.

According to *Table* 3, No. 2 solid Copperweld is classified as a large conductor, "A". In the 250 feet section of *Table* 4, 95 feet is found to lie between 75 feet and 125 feet; hence the larger figure is selected. The 13,200-volt line falls in the 8,700 to 50,000-volt class; reference is therefore made to the "A" section of the column under this class. The minimum clearance is then found to be 7′2″.

If the supply conductors in this example had been No. 6 Amerductor, instead of No. 2 Copperweld, the

Please Turn To Page 86

TABLE TWO—Minimum Vertical Clearances at Wire Crossings

Nature of Conductors Crossing Over Telephone Cable, Wires and Guys	Minimum Clearances From: Telephone Wires and Cables	Telephone Guys
(1) Foreign communication cables, guys and wires, (Note 1)	2′	2′
(2) Foreign communication cables and wires used with supply circuits and not of the same construction as standard communication circuits	4′	2′
(3) Supply cables of all voltages with permanently grounded metal sheath or messenger (Note 2)	4′	2′
(4) Open-wire supply lines, supply service drops, trolley feeders, and supply cable with sheath not permanently grounded (Notes 2 and 3)		
(a) 0 to 750 volts, wires above or below service drop (Note 4)	2′	2′
(b) 0 to 750 volts, telephone cable above supply service drop	4′	2′
(c) 750 to 8700 volts (Note 5)	4′	4′
(d) Multigrounded neutral of 750 to 15,000 volt supply circuit (Note 6)	4′	2′
(e) 8700 to 50,000 volts	6′	4′
(5) Guys to supply poles	2′	2′
(6) Trolley contact conductors crossing under telephone line		
(a) 0 to 7500 volts	6′	6′
(b) 0 to 750 volts for guys and cable protected against chance of trolley pole striking them when on leaving trolley contact conductor, and for wires beyond reach of trolley pole in its sprung position	4′	4′

Notes:* 1. *These clearances may be reduced by mutual consent of parties concerned, except for fire alarm wires and wires used in the operation of railroads and supply systems.

2. *Unless otherwise authorized, all telephone wires and cable shall pass under supply conductors and cables.*

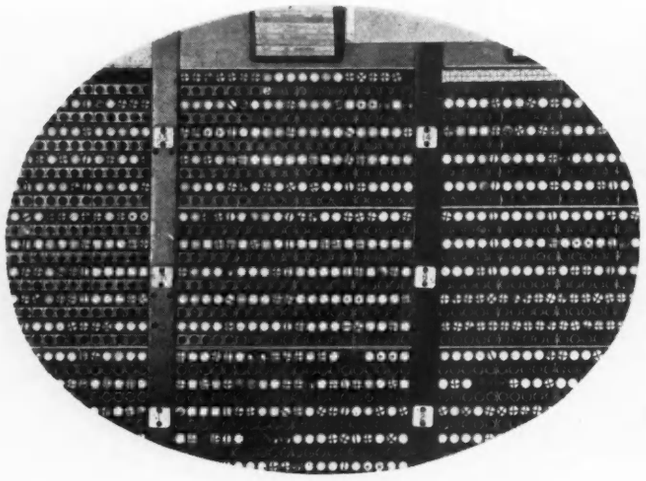
3. *It may occasionally be necessary to place a "passing attachment" of telephone wires on a foreign pole in a crossing. Clearances specified in this section apply to the conductors involved in the crossing.*

4. *When the voltage to the ground does not exceed 300 volts, neutral conductors of supply primary circuits are not involved, and the crossing is not within 6 feet of any pole, a minimum clearance of 2 feet may be permitted, if the supply wires are above the telephone wires or cable.*

5. *The clearance shall be increased to 6 feet when the supply wires cross over a telephone line within 6 feet horizontally of a telephone pole.*

6. *Neutral wire effectively grounded at approximately one-quarter mile intervals and located below lowest "hot" wire. This minimum clearance is recommended only in situations when it is impossible to secure the clearance specified in 4 (e) and the voltage of the supply line is not more than 15,000 volts. As a further precaution, the telephone span passing under the supply wires should be made relatively short.*

***THIS ARTICLE** presents excerpts from here and there, thoughts on service, tone of service and operator toll dialing.*



Notes From A **Supervisor's Notebook**

By RUTH E. RICHARDS

***WHAT'S YOUR** favorite phase of telephone work? Does your notebook contain "selected items" you would enjoy sharing with others? Here are a few tips from Miss Richards' notebook of operating tips.*

SEPTEMBER:—"There is a hint of autumn in the air"—vacation days are coming to an end, schools are "open for business" and most of us are planning winter schedules as we gradually feel the lethargy of summer yield to the crispness of fall.

In keeping with the tendency to "creep up on work" we have excerpts from here and there, thoughts on supervision, on tone of service, on operator toll dialing.

Are you a "clipper, a scrapbook or notebook keeper?" I am, of everything from poetry to receipts, how-to-do's and how-to-deal's (with various situations, that is), this latter being simply ideas on better human relations. One of my latest additions on this theme was Mr. Walter Roberts' article "Dollars & Sense In Human Relations" which appeared in *Fortnightly Telephone Engineer* for April 1, 1954.

In this splendid article on the humanness of people, Mr. Roberts speaks of "attitude training" and says that it "consists in providing individuals or groups with preconceived viewpoints that will affect the way they see and respond to a situation."

Some of the items that I would emphasize in attitude training would be: a pleasant voice tone; a courteous and helpful manner; good choice of words; use of good judgment in handling the unusual, and calls or requests from customers.

From a handbook of secretaries by Besse Miller, the author, an authority on business problems, says "If you have a correct attitude toward your employer, you show genuine interest in your work and the welfare of the company; you are loyal, doing an individual job of public relations."

From attitudes to tone of service is an easy step.

Tone of Service

YOU HAVE READ many articles dealing with tone of service, and no doubt have heard this topic discussed many times in meetings, but it seems to be one subject which bears repeating again and again. Like "variations on a theme" the definitions for tone of service are many. I like to think of it as courtesy in action. And what is this thing called courtesy? It is graceful and considerate behavior toward others. It carries with it a spirit of genuine sympathy, thoughtfulness and profound respect for other people. It is a quality so valuable that it deserves our best efforts to achieve and sustain it, and put it to use. " . . . . . but the man worthwhile, is the man who can smile when everything goes dead wrong."

Perhaps the truest test of the quality of our tone of service is when it stands up in the face of service criticisms. Service complaints will be received occasionally in even the best managed offices. To prevent such complaints from becoming serious in nature, the use of good judgment and a courteous manner in dealing with the complaining customer will more often than not turn his annoyance into acceptance of our efforts to right the condition about which his complaint centers.

Often all that is necessary is to listen quietly to the complaint, then express regret that the customer had cause to complain. Often a complaint may be made because of a customer's request which cannot be granted due to certain practices or regulations you may be required to follow. Courtesy — tone of service — makes the refusal easier for the customer to accept. Taking the time to give a reasonable explanation as to why you cannot accede to the request may

prove profitable from a public relations angle, for every contact with a customer offers an opportunity to develop a favorable attitude toward your company.

What Is a Leader?

YOU ALL KNOW people whom you instinctively think of as leaders. In every group from kindergarten to Ladies Aid, one or more of the group stand out as able and willing to direct the activities of others. What is this quality of leadership that is so apparent in some people? Actually it is a blending of a number of qualities; it is an air of authority which inspires confidence and trust and respect; it is the ability to remain calm and natural in tense situations, to be honest about one's knowledge and tactful in expressions of opinion.

In some persons these qualities seem to have existed always, but do not be misled into thinking that all leaders are born, not made. The attributes of leadership can be fostered, the rules learned and the necessary knowledge acquired by anyone who chooses to be a leader.

In a central office we want our supervisory people to be leaders in the truest sense of the word and their training should serve to develop the characteristics desirable in a leader.

In my notebook I find this definition of supervision. "It is a combination of the two words 'super' and 'vision'." 'Super' is a word used when we mean to infer that a thing is 'better than ordinary' or the 'greatest.' 'Vision' means sight or understanding. In combining the two words than we mean 'better than ordinary ability to see and understand.' It is in this respect that we must look upon the responsibility of supervisory positions."

In this country there is an organization called the "Longfellows," whose members must be 6 feet 5 inches or taller to qualify. As you and I look at these "longfellows" we see them mainly as "standing out from the crowd." As an operator becomes a supervisor (or service assistant) and steps on the first rung of the ladder of advancement, I like to think that this makes her a sort of longfellow; standing just above the crowd, overseeing activity around her and being looked up to. *Training* will give her job knowledge, will help her to form her attitudes toward her work, and instill the will to achieve that will justify the elevation. It will create confidence within her and teach her to set a good example. For above all the example set by the supervisor is of great importance; she must deal with operators in the same spirit that operators are expected to deal with customers.

Thinking along these lines will you learn a new word with me? It is a word whose meaning is very related to attitudes and to leaders. It is the word, "empathy." Empathy means a sympathetic understanding or graps of *the other person's point of view.*

You can see at once why the quality of empathy is an important personality factor. Since your success in life depends to a great degree upon the effect of your personality on other persons, it really is worth while to cultivate an attitude which causes you to think more about the other person and his hopes and ambitions than you do of your own. Surely the development of a pleasing personality is part of training for leadership.

Operator Toll Dialing

AS THE nationwide system of operator toll dialing expands and more areas are benefiting by the faster service which it provides, we find increased interest being shown by operating people in smaller offices. Even though they do not expect to have such equipment in their own exchange, knowledge of the general operating features of toll dialing adds interest to their own work. For those of you who have not read other explanations, we offer a simple outline of the process from the operator's view.

The long distance operator answers the calling customer in the usual way — the customer may have dialed a code to reach her, or has asked his local operator for "long distance." The operator records the necessary information on a toll ticket. She dials (or key pulses) a series of numbers and letters into switching equipment. These numbers and letters form a code for a specific telephone somewhere in the United States or Canada. The digits which she dials enable mechanical switching equipment in cities along the route to complete the connection and ring the called customer's telephone.

On a fully dialed call the operator times the conversation from lamp signals. When a disconnect signal is received and she takes her cord from the toll circuit on which she dialed, the entire connection is released. No clearance is required.

On some calls, an operator who has toll dialing equipment available may dial through to the distant city and reach an operator who establishes the connection. On such calls she will not receive disconnect supervision from the called party's telephone. On calls to certain places the originating operator may reach an intermediate operator somewhere along the route by dialing a code, then reach the called office manually. Speedier service to the calling cus-

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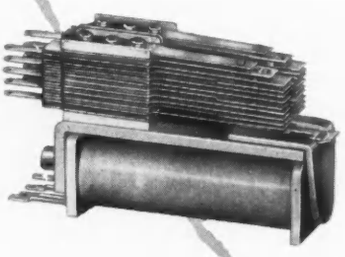

Leich 900 type relay

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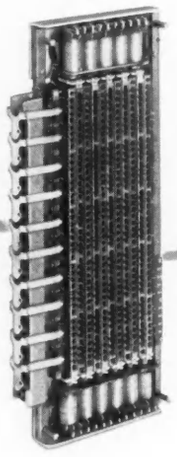

Leich relay switch

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FOR MILLIONS OF OPERATIONS!

THEY perform *all* the operations on your Leich Dial System

The Leich relay switch has been tested for operations equal to 100 years of service. At the end of this test, there were no signs of wear, no need for adjustment.

Similarly, the Leich 900 relay has been tested for millions of operations. These two thoroughly proven elements perform *all* the operations on your Leich Dial System.

There are no ratchets, pawls or moving parts to wear or require oiling or adjustment. The Leich Dial System was designed so there would be less to go wrong, so you could depend on it to give efficient dependable dial telephone service with a minimum of maintenance and adjustment.

Today, Leich Dial Systems, because of their faithful performance, are being operated profitably in more than three hundred independent telephone exchanges.

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tomer is the result of each of these processes.

The codes which the long distance operator dials are her "routing" information and she has ready reference material at her position for all points frequently called. These codes are based upon a nationwide numbering plan which covers the entire toll network. The United States and Canada are divided into about 90 numbering plan areas, each identified by a three-digit code. Within each area every central office is identified by a three-digit code, which is not duplicated within the numbering plan area and which does not conflict with any area code. Then every telephone within the central office area has a distinct number. (*See chart One.*)

The following example is a typical routing code as set up by an operator and an explanation of its meaning:—

A subscriber tells an operator that he wants to call Detroit, Webster 3-1234. The routing on the operator's ready reference indicates, Detroit—Cgo 313+2L+. This routing means that Detroit is in the 313 numbering plan area and that the operator reaches it by dialing on a Chicago circuit. The code for the Webster 3 office is WE3—(the same code that Detroit subscribers use for dialing a number in that central office) i. e. 2L+ or two letters of the exchange name plus the office number 3, and the telephone number digits—1234. Thus the operator plugs into an idle Chicago circuit, dials 313-WE3-1234 and sends the call on its way.

Toll Operating Practice Changes

FOR THE PAST two years, certain toll operating practices have been provided in modified form in order to conserve circuit usage time. The use of these modifications was optional, governed by conditions in the offices. Most of these optional practices have now been incorporated as regular procedures.

The following items should be adopted to provide uniform service to customers:

OVERLAPPING OPERATIONS AND TEAMWORK: After passing a call to the distant office, or dialing the called number, if the calling party is not holding the line, the operator rings the calling telephone as soon as she knows that the called telephone is being rung, instead of waiting for the called station to answer. If the calling telephone answers first, say for example, "I am trying your (cld. pl.) call. Will you hold the line please?"

CHECKING AVAILABILITY OF CALLING PARTY:—Before making a subsequent attempt on any call, if word has been left or in any case if 30 minutes have elapsed since the last report was given to or received from the calling telephone, check the availability of the calling party before taking up a circuit to work on the call. Reach the calling telephone and say for example, "On your (or 'Mr. (clg. pty.)'s' call to (cld. pl.), are you (or 'is he') ready to have the call tried?" or if word was left, "shall I try to reach Mr. (cld. pty.) now?" If the calling party is ready, ask him to hold the line and proceed with the attempt. If he is not ready, leave word for him to call Long Distance—the TX operator, and release the calling line.

SUBSEQUENT ATTEMPTS:—The following table of subsequent attempts, which has been in force as a provisional practice, is now regular procedure.

Report	Interval — Minutes			
	Before Calling Line is Released		After Calling Line is Released	
			Next Attempt	Other Attempts
BY or no trunk	5	5	10	Every 20 minutes until different report is received.
By tlk, ext. or rm. tel. BY, LK LK few, WT few, NRG pty. paged, LF			20	
DA or OD Ext. or rm. tel. DA U few			20	As directed by calling party
U definite time			20 min. after expected time if word is left, otherwise at expected time.	
U indefinite time, attending conference, not ready to talk, BY pers., etc.			As directed or at end of 2 hours	

Exception: — In the State of Illinois, provision is made to proceed as directed by the calling party following the first DA report rather than make the first voluntary subsequent attempt in 20 minutes as shown in the table.

In general, the subsequent attempt time is: (1) the time at which you offer to try the call again; (2) the time specified by the calling party; or (3) the time at which a called party is expected or a messenger is expected to return. However, if you have left word following a report of *expected definite time*, add 20 minutes to the expected time in order to give the called party an opportunity to report.

If the directions received do not indicate when you should make the next attempt, make additional attempts in accordance with the above table based on the report involved, or as provided later for the case where there is no prescribed attempt time.

If you believe that an earlier or later subsequent attempt time will result in more efficient handling of a call, change the attempt time accordingly; for example, defer an attempt until after the lunch hour or advance it to before the close of the business day.

If the called telephone mentions 2 times, such as "Two or three o'clock," use the earlier time in determining the attempt time unless word has been left in which case use the later time.

If there is no prescribed attempt time, ask the calling party what time he wishes the call tried and if he does not indicate a time, tell him when you will make the next attempt, based on your judgment, as in the following examples: DA, OD, NRG not paged or cf, add one hour to the time the report was received; U afternoon received during morning hours, use 2:00 P. M.; U evening received during day hours, use 7:00 P. M.; future day or not known whether

expected future day, use 9:00 A. M. Say to the calling party, for example, "I will call you at (time) if that will be satisfactory." — THE END.

Conclusion

WELL-L it seems that no matter with what subject we start, operating practice creeps into the discussion sooner or later. Perhaps that is typical of traffic supervisory people — at least such as I — whose "first love" was and is toll work with all of its fascinating variety.

What's your favorite phase of telephone work? Does your notebook have in it "selected items" that you would enjoy sharing with other collectors? Perhaps your notebook has some blank pages that you'd like to fill with additional paragraphs about a particular subject. It might be very interesting to have an article built about a "Swap Shop" collection. Won't you let me hear from you?

Next month we will turn to the page in our notebook marked "The 3 R's," (telephone version) where we have filed items about rates, routes, and ready references.—THE END.

Coming Conventions

Rocky Mountain Telephone Association, Newhouse Hotel, Salt Lake City, Utah, Sept. 16, 17.

Tennessee Telephone Association, Hermitage Hotel, Nashville, Sept. 16-17.

Arkansas Telephone Association, Majestic Hotel, Hot Springs, Sept. 20, 21.

United States Independent Telephone Association (National Convention), Conrad Hilton Hotel, Chicago, Oct. 11, 12, 13.

North Carolina Telephone Association, Carolina Hotel, Pinehurst, Oct. 18, 19.

South Carolina Telephone Association, Myrtle Beach, S. C., (Hotel to be named later), Oct. 25, 26.

Virginia-West Virginia Telephone Association, Roanoke Hotel, Roanoke Oct. 28, 29.

Oklahoma Telephone Association, Huckins Hotel, Oklahoma City, Nov. 4, 5.

Alabama-Mississippi Telephone Association, Thomas Jefferson Hotel, Birmingham, Ala., Nov. 8, 9.

South Dakota Telephone Association, Sioux Falls, Nov. 11, 12.

Georgia Telephone Association, Bon Air Hotel, Augusta, Nov. 12, 13.

Florida Telephone Association, Soreno Hotel, St. Petersburg, Nov. 15, 16.

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Designing Modern Communication Lines

By J. N. PETRIE*

INTRODUCTION

It is recognized that there are many questions which confront the communications engineer in the design of outside plant for high frequency carrier telephone system operation.

In general, there are perfectly logical and adequate answers available to these questions; but, frequently they have been buried in inaccessible specifications or scattered among a variety of miscellaneous publications. The data contained herein was compiled from a variety of sources, among them the Bell System, the AAR, Western Union, Copperweld Steel International Co., Automatic Electric Company's Handbook for Telephone Managers and Engineers, and Reference Data for Radio Engineers.

The foremost thought has been to present the available data in a simple and logical form, to offer some interpretations and comments (based on some 25 years experience in the communication industry) which emphasize the newer techniques and recent technical advances which tend to provide a more economical outside plant without jeopardizing the established standards of performance prevailing in the industry today.

It is also hoped that the data presented will point the way to more effective utilization of the existing outside plant so that improvements in the performance of existing and proposed carrier installations will be realized.

Foreword

THERE WAS a time when creating a new "trunk" or "long distance" circuit meant stringing a new pair of wires between the two switchboards involved. If the distance was not in excess of 25 to 30 miles it was very likely that iron wire would be used in its construction; if longer, then copper wires would more or less grudgingly be approved to make the circuit "talk up" better. However, in determining the type of construction to be employed it was almost unheard of to take into consideration the overall transmission design of the complete network of trunks and exchanges. The problem of "crosstalk" between paralleling circuits was also, all too frequently, shrugged off; or, at best, a haphazard pattern of transpositions was cut-in at the discretion of the construction foreman.

It is true, of course, that most companies found long ago that they had to change their thinking about outside plant construction practices and to adopt improved techniques for one reason or another. Probably most of the changes that have come about have been forced upon the industry by economic factors. Examples are the use of small gauge cable, long span construction using high strength steel or Copperweld line wire and similar devices. Because major *transmission improvements in the toll plant* permit major *savings in the design of the exchange plant,* the use of iron wire in "trunk" circuits is rapidly disappearing.

World War II and its fantastically increased demand for "long distance" telephone circuits, the war in Korea and drastic restrictions on usage of copper, and more recently, the high labor costs have all tended to make operating telephone companies look for new ways to create circuits at lower cost, in larger quantity, and higher quality.

For some time now, on a typical open-wire trunk route, the best solution has been the economical, "stackable," 3-channel carrier telephone system; more recently, higher frequency multi-channel systems have begun to find their place in the scheme of things. The application of carrier systems to outside plant that was originally built for operation of voice-frequency physical and phantom circuits does present some new problems, especially those of controlling the crosstalk by suitable transposition designs and smoothing out the attenuation peaks.

*Mr. Petrie is manager, carrier and radio sales, Automatic Electric Co.

There are many instances, however, where it is desirable for a number of reasons to construct entirely new lines, and under these conditions modern design offers the opportunity for major economies, superior performance, and low maintenance costs in the form of long span construction using Copperweld wires, each pair providing up to 15 or 16 carrier channels. Such a design is predicated on the fact that today it is cheaper in many instances to derive trunk and toll circuits by carrier current methods than by other means of construction. Even in the design of the most modern carrier equipment this fact is recognized since provision is made for abandoning both the physical and phantom voice frequency circuits.

Before elaborating further on the details of such a design it will be necessary to touch briefly on the major characteristics of open-wire circuits at carrier frequencies.

Characteristics of Open Wire Circuits at Carrier Frequencies

WE SHALL consider under this heading only the more important physical and electrical characteristics of the open-wire facilities used in the "trunk line" and "long distance" telephone plant. We will be particularly interested in those physical and electrical characteristics that have a direct bearing on their usefulness as transmission media for carrier frequencies up to 150 kc. Mention will be made of cables only in so far as they are used for "entrance" or "intermediate" purposes in conjunction with open-wire circuits. The factors affecting carrier operation in cables are quite different and really constitute another subject.

Not so long ago the application of even a single channel carrier system to an open-wire route involved elaborate studies of the noise, crosstalk, and transmission performance of the open-wire facilities to be used. Today these factors are well understood by many engineers as far as the frequencies up to 35 kc are concerned, but they are less adequately understood in the ranges between 40 kc and 150 kc. This latter frequency range is becoming of great importance because of such economical high frequency carrier systems as the Lenkurt Type 45A, 45B, and 45C and the Western Electric Type "O."

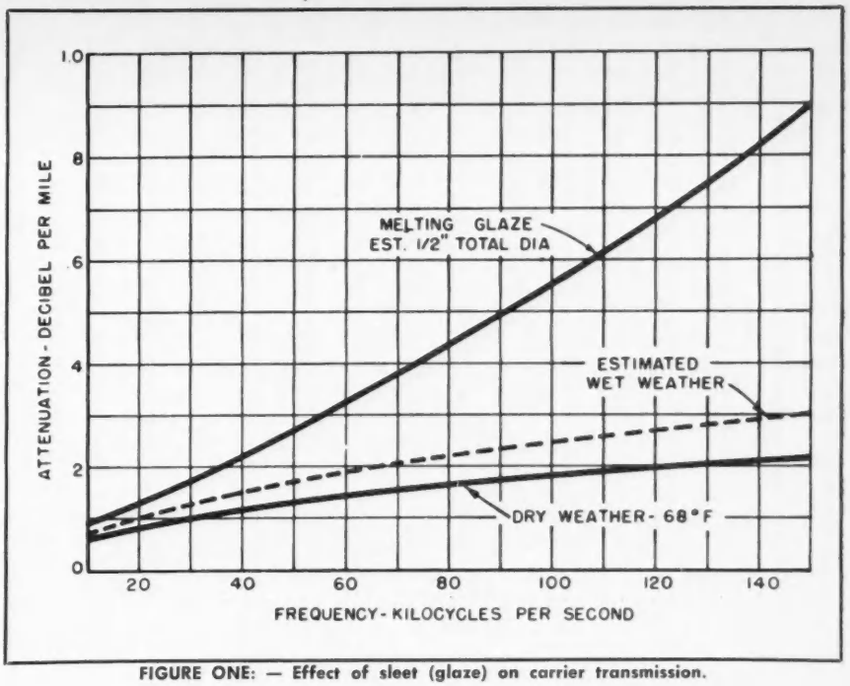

FIGURE ONE: — Effect of sleet (glaze) on carrier transmission.

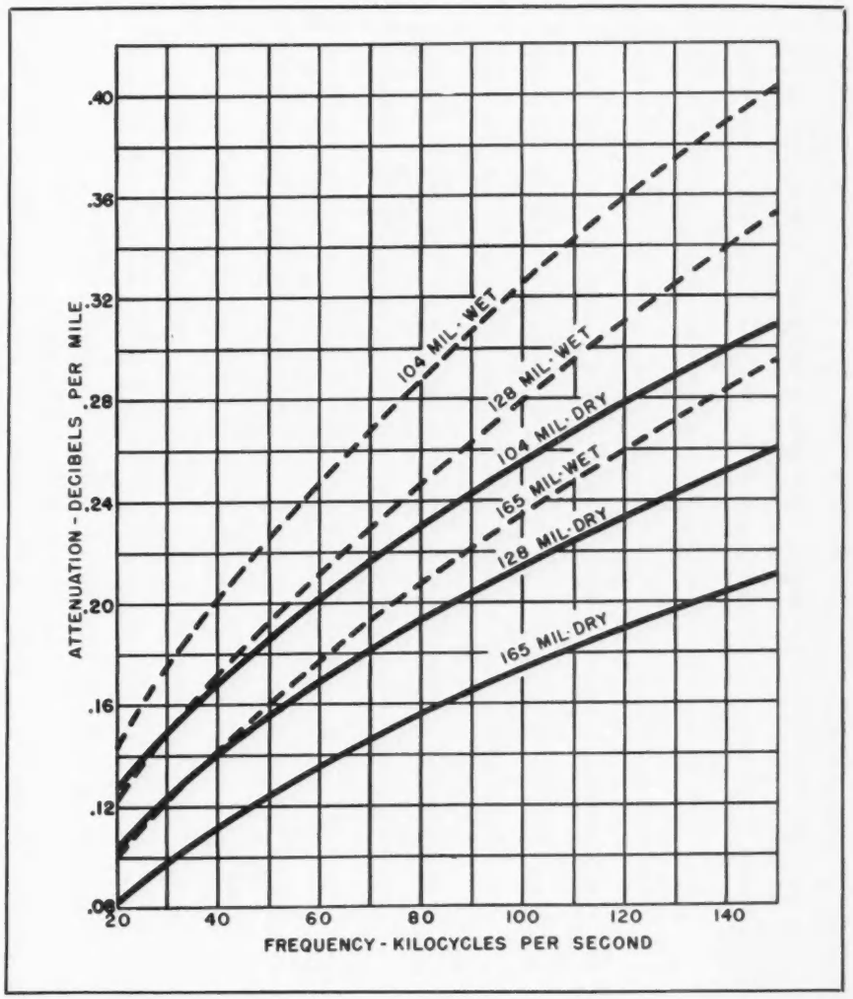

FIGURE TWO: — Typical attenuation-frequency characteristics of open wire pairs — 8" spaced.

Generally, in the Independent and Industrial segments of the communications industry all except the shortest "trunk" and long distance circuits have consisted of phantomed pairs of 165, 128, or 104 gauge copper conductors. More recently many of these phantom groups also have

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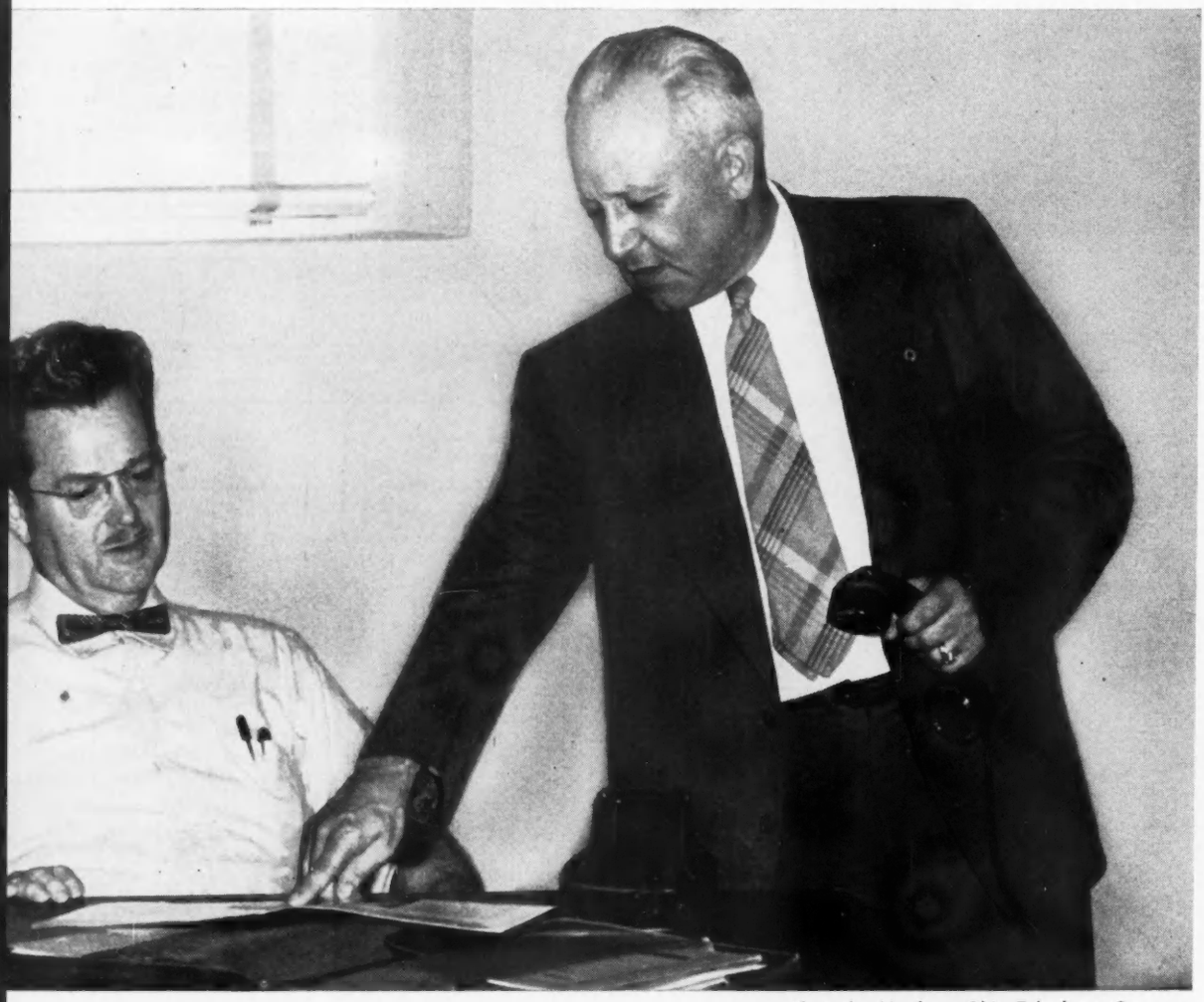


Photo by Northern Ohio Telephone Company

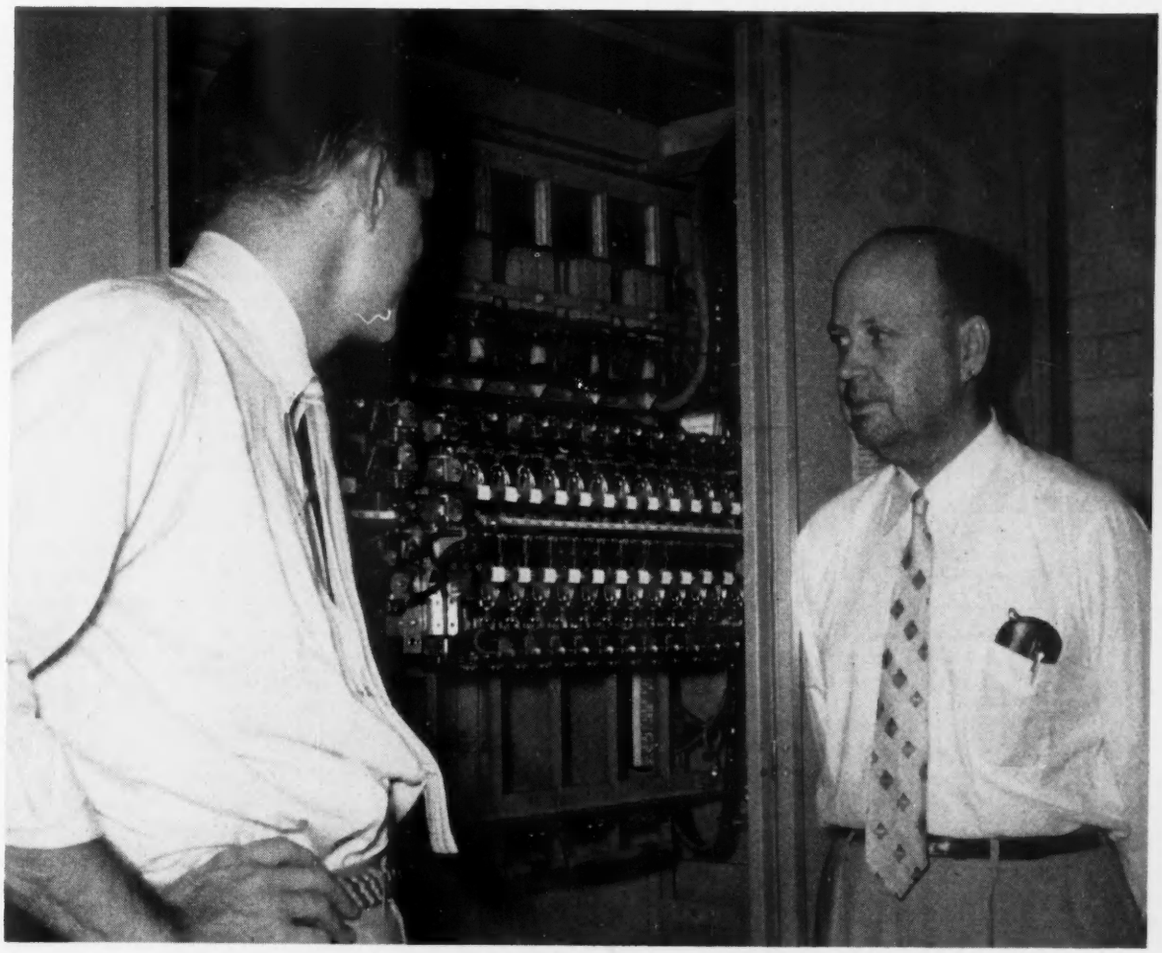
Nap T. Videan (right) Commercial Representative, Northern Ohio Telephone Company, shows prospect how P-A-B-X could save valuable time and footwork in prospect's office.

Mr. Videan's most effective scheme for P-A-B-X promotion stems from his use of five-station wiring plans. When a request comes in for the sixth station, that subscriber is immediately tagged as a P-A-B-X prospect. "In each case," says Mr. Videan, "where I have had the opportunity of explaining P-A-B-X, I have never had any difficulty in selling this service on my first call."

Canvassing is another effective method of locating P-A-B-X prospects, Mr. Videan finds. Inquiries for P-A-B-X service are answered by a sales letter, followed by a personal call.

Northern Ohio Telephone Company operates 66 offices and 65 P-A-B-X's.

they're making P-A-B-X pay!



L. A. Corning III (left), Tarboro Sales Supervisor, Carolina Telephone and Telegraph Company, chats with Dr. Theo. Easom, a P-A-B-X subscriber, during a routine checkup call. Prospects are invited to visit existing installations such as this. "On such occasions," Mr. Corning says, "our P-A-B-X users tend to be our best sales boosters."

Mr. Corning regularly scans the local newspapers, notes new industries, and then contacts them. If the sale is not completed during the initial interview, a follow-up sales letter is sent "to verify monthly charges and contractural requirements." Says Mr. Corning: "We have found this letter particularly effective."

Inquiries for P-A-B-X service draw a quick personal visit.

Carolina Telephone and Telegraph Company operates 110 exchanges and 186 P-A-B-X's.

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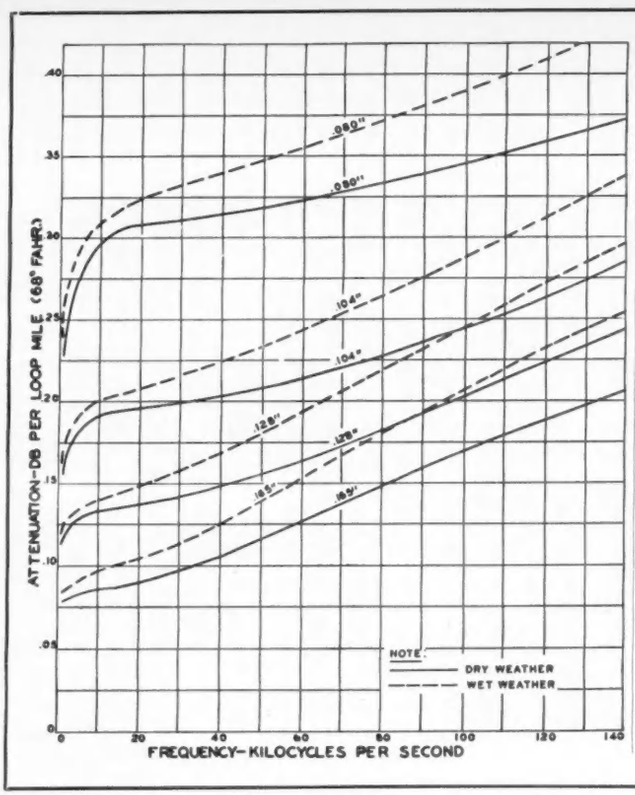


FIGURE THREE: — Attenuation at carrier frequencies — hard drawn Copperweld 40% conductivity. 35 pairs of CS Insulators per mile — 8" spaced.

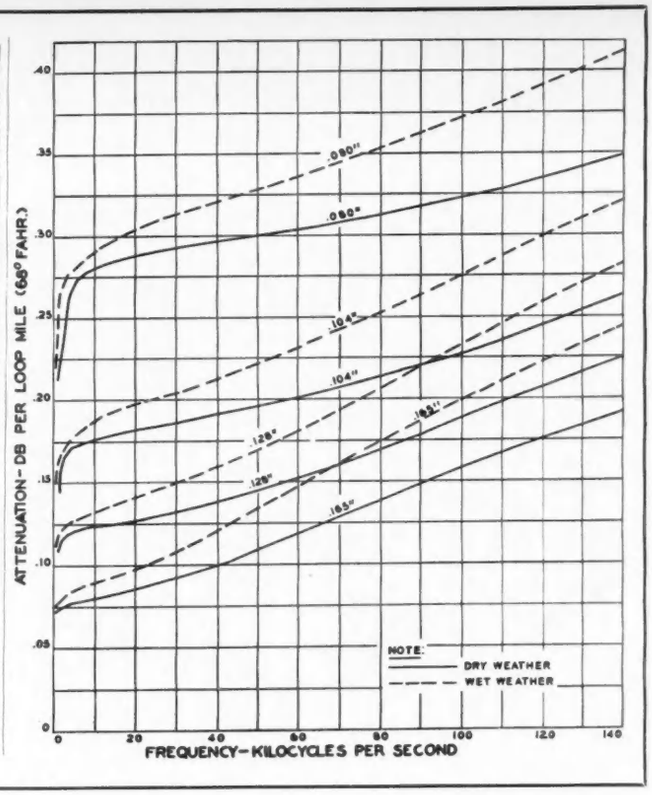


FIGURE FOUR: — Attenuation at carrier frequencies — Hard drawn Copperweld 40% conductivity. 35 pairs of CS insulators per mile — 12" spaced.

had "low frequency" carrier telephone systems superimposed. Many of these carrier applications in the Independent telephone plant have been for only short distances, and selection of the facilities to be used, together with the availability of "staggered and inverted" carrier systems, has in general permitted a significant expansion in circuits by this technique.

Today most of the available open-wire pairs that are suitable for this type of expansion have been used up, but the need for still greater circuit groups has not been satisfied, in fact, with the advent of nationwide operator toll dialing (and nationwide subscriber toll dialing just around the corner) the need for further extensive increases in circuits is already with us.

The question at this point could very logically be "where do we go from here?" Fortunately, there are already available economical carrier telephone systems that will permit the "trunk" capacity of the present open-wire plant to be increased by as much as 1500%, without stringing a single span of new wire. But suppose your present trunk and long distance circuits are of iron, or steel (which are generally not suitable for carrier operation), or are entirely "non-existent" — what then? You will probably find your answer in the following sections on "Engineering Considerations in the Design of Open-Wire Plant."

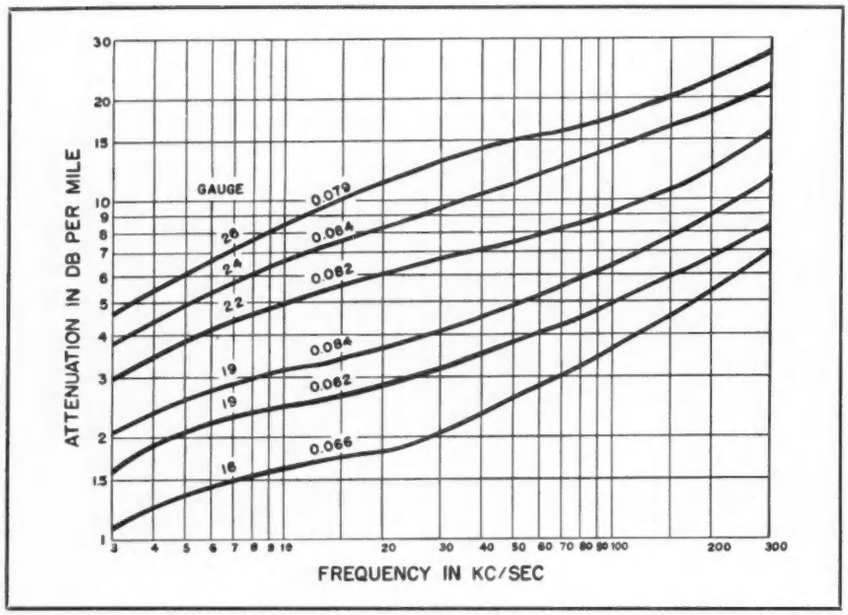


FIGURE FIVE: — Typical values of attenuation in db per mile for commonly used cable pairs — at 55°F.

Transmission performance of Various Line Conductors

AFTER ALL general factors have been analyzed, it will still be necessary to know what the "attenuation per mile" will be for the line facilities that may be available or that are to be constructed. At this point it should be emphasized that the design should be based on the maximum attenuation that is permissable

at the highest frequency to be utilized ultimately, which is almost certain to be 150 kc, rather than on some other, and lower, frequency that may meet the requirements at the moment. Also, it must be kept in mind that weather conditions vary widely in different parts of the world and even in different parts of the same state, and, consequently, will have a major effect on the final transmission design decided upon. The greatest hazard to be contemplated generally is sleet or glaze ice. *Figure* 1 shows the effect on transmission of such a condition. To what extent the effect of sleet must be taken into consideration in the overall design of a carrier system can be determined only on the basis of:

(1) The characteristics of the equipment which is to be used.

(2) The frequency of occurrence of sleet conditions.

(3) The permissible voice level variations in the circuits.

(4) The permissible outages of any particular circuit group.

(5) Other factors which must be evaluated specifically for each project.

For our purpose the "normal" transmission performance of a pair of wires or cable pair will be considered as being of greatest importance and the charts and tables that follow are of this type. Normal transmission performance might further be defined as the range from "dry" to "wet" weather (without excessive attenuation peaks due to "absorption" or "reflection" effects.) *See Figures* 2, 3, 4 *and* 5.

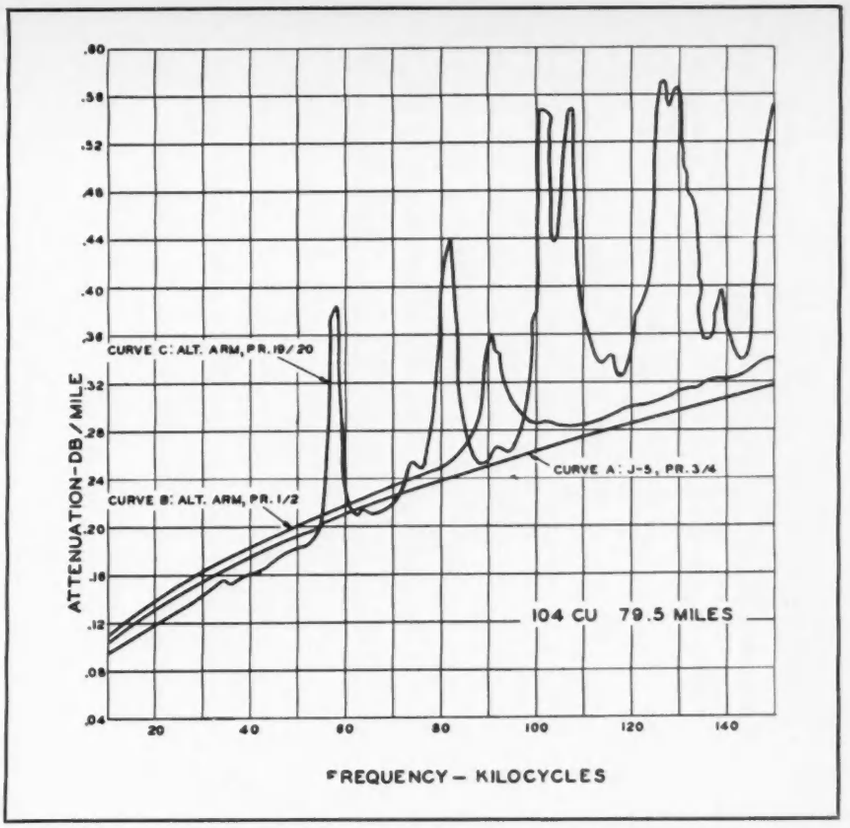


FIGURE SIX: — Measured attenuation of 79.5 miles of copper open wire pairs (0.104 inches diameter) for some different transposition patterns.
Curve A: Pair 3/4, CS insulators, 8" spaced, J-5 transposed.
Curve B: pair 1/2, DP insulators, 12" spaced, alternate arm transposed.
Curve C: Pair 19/20, DP insulators, 12" spaced, alternate arm transposed.

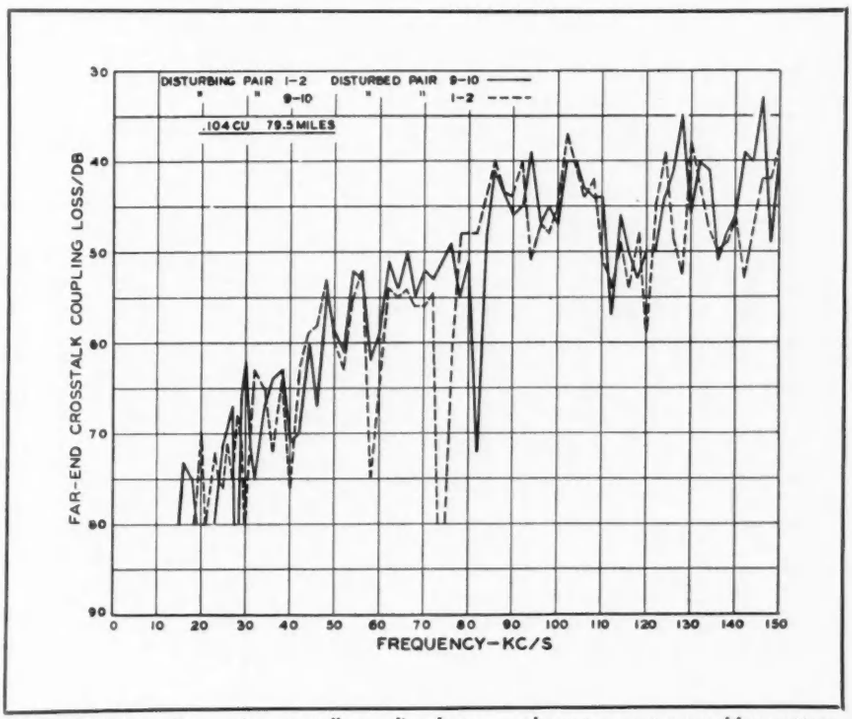


FIGURE SEVEN: — Open wire crosstalk coupling losses — alternate arm transposition pattern.

Effect of Transpositions on Transmission, Noise & Crosstalk

FIGURE 6 shows graphically the effects that different transposition patterns may have on the transmission performance of a pair of wires. The J-5 transposed pair (Curve A) is smooth and free from absorption peaks and, would be entirely suitable for the transmission of any frequencies up to 150 kc.

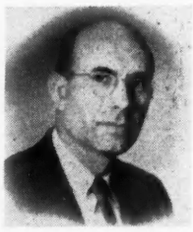
The facilities shown in Curve B, in general, also would be suitable for transmission of all frequencies up to 150 kc, but in this case it is likely that crosstalk would be a limiting factor (even if compandors were used) because the design of the alernate arm transposition pattern does not contemplate carrier operation at frequencies in excess of 35 kc. Curve C indicates the transmission performance that may be expected in the case of one of the low-frequency (10 kc) transposed pairs on an alternate arm line. Due to the very deep and sharp absorption peaks present it would not be feasible to use this type of facility for the transmission of carrier frequencies in ex-

cess of about 50 kc. *Figure* 7 shows the crosstalk coupling between two typical pairs of wires on the top crossarm and transposed to the alternate arm pattern. It is quite obvious that acceptable crosstalk (of the order of 55 db) is obtainable only at frequencies below about 45 kc. It is entirely feasible, however, to operate compandor-equipped carrier systems in the region where the crosstalk is 35 db since a 22 db advantage can be gained by their use. The performance under these conditions would be equivalent for the region below 40 kc without compandors, and the region above 40 kc with compandors.

Unfortunately, the alternate arm pattern provides only a limited number of pairs whose performance is this good and, therefore, a higher frequency transposition pattern, such as the "J-5", "O-1", or AE-150 must be used. *Figure* 8 shows the crosstalk performance of a typical 8″ spaced pair when "J-5" transposed. The results obtainable with the "O-1" or AE-150 transposition pattern will be somewhere between the limits shown on *Figure* 7 and *Figure* 8.

From these results it is evident that a good 35 kc transposition pattern frequently may be adequate when compandors are used with the carrier system proposed. It also is evident that a "J-5" transposition pattern is more than adequate even when compandors are not used. Since compandors are relatively economical as compared to "J-5" transpositions, it is generally the practice today to use them in conjunction with a "compromise" type of transposition design, such as the O-1 or AE-150 and thereby achieve the desired result at a considerable saving in the outside plant costs.—(*To Be Continued.*)

Meet The Author



***JOSEPH N. PETRIE** is a graduate of the University of Denver (E.E., '29). His first position in the communications field was with the Mountain States Telephone and Telegraph Co. After serving in various capacities, he was appointed Assistant State Toll Wire Chief, in which position he had maintenance supervision over toll terminal apparatus, repeaters and other equipment relating to long line operation.*

In 1935, he was appointed engineering assistant to the State Plant Engineer of The Mountain States Telephone and Telegraph Company, and for the following four years was engaged in various matters relating to plant design and engineering, including the techniques of carrier system application, the engineering of transposition patterns, loading practices and transmission design for both local and toll plant.

In 1939, he accepted a post as System Telephone and Telegraph Engineer for the Union Pacific Railroad, with headquarters at Omaha, and in this capacity supervised the network of communication lines for the entire Union Pacific system. It was largely through his efforts that the Union Pacific has achieved distinction for the high efficiency of its communications facilities, as well as becoming conspicuous for its extensive use of carrier systems.

In 1945, Mr. Petrie accepted a position as Staff Engineer for Automatic Electric Sales Corporation of Chicago. In 1949 he was made Manager of Carrier and Radio Sales. Mr. Petrie and his staff act in a technical advisory capacity in connection with projects involving the use of Lenkurt carrier telephone and telegraph equipment, for which Automatic Electric Sales Corporation is distributor.

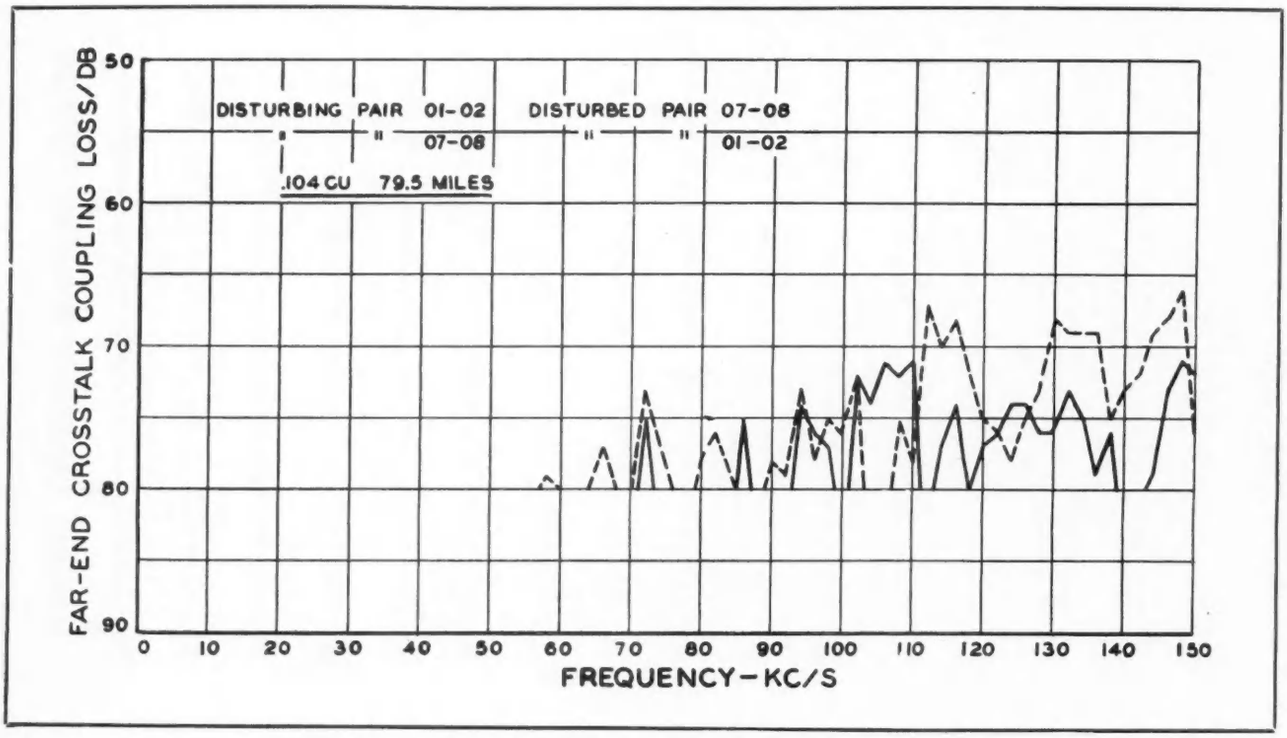


FIGURE EIGHT: — Open wire crosstalk coupling losses — J-5 transposition pattern.

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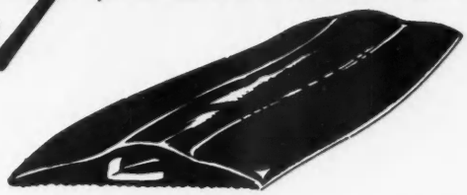

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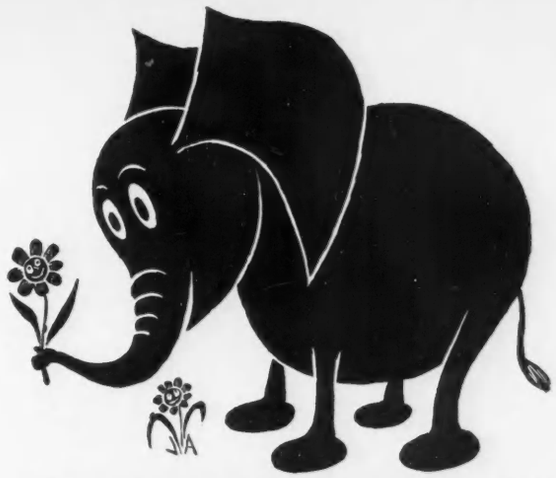

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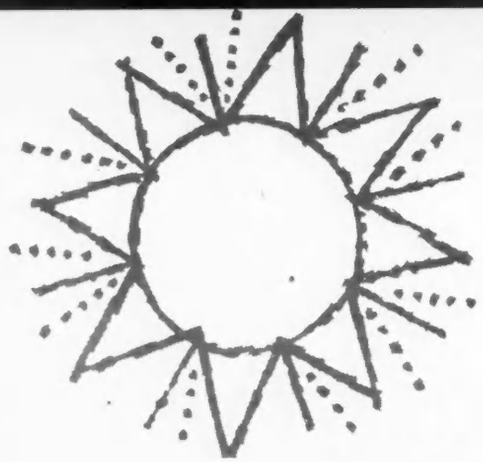

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The ad story across the page tells how telephone people everywhere are always ready to serve beyond the call of duty. Thus, it reminds users that the great *everyday* value of the telephone becomes *priceless* in time of emergency.

And *value* is what all telephone companies have to sell. The advertisement appears in September magazines that reach into the territories of every one of America's 5100 telephone companies.

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Out of the Night Came a Call for Help

Quick action of alert telephone operator helps save man with heart attack

AWARDED VAIL MEDAL. Mrs. Carolyn F. Gross, night operator in Berlin, N. J. Awarded Vail Medal for "initiative and resourcefulness" in answering an emergency call. Vail Medals, accompanied by cash awards, are given annually by the Bell System for acts of noteworthy public service by telephone employees throughout the country.

It was about two o'clock of an August morning when the call flashed on the switchboard. A woman, in an excited voice, asked to be connected with a doctor.

Mrs. Carolyn F. Gross, the night operator, rang the doctor's home immediately but he was unavailable. Sensing a critical emergency, she asked if she could be of help in getting another doctor.

"Oh, please do everything you can," implored the caller. "My husband has had a heart attack and is very ill."

Mrs. Gross rang a doctor who had helped in a previous emergency. Then, realizing he was new in the area, she arranged to have the State Police meet him at a certain point and lead him to the house.

Shortly after, the subscriber's daughter called to ask for oxygen.

"It's on the way," said Mrs. Gross. "I thought you might need it so I telephoned the emergency ambulance service. They ought to be there any minute."

Just before she went off duty, Mrs. Gross called to ask how the sick man was doing and if there was anything else she could do.

"You've already done so much," said a grateful voice. "The doctor says that it's only because of your help that my husband is alive."

POLICE ESCORT. To help the doctor get there faster, the operator arranged for the State Police to escort him to the sick man's home.

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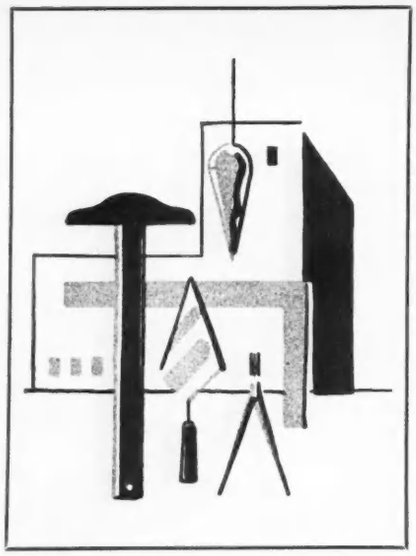

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Weller "Junior" Soldering Gun

WELLER ELECTRIC CORP., Easton, Pa., has introduced a new low-cost "Junior" Soldering Gun with ample power for all general soldering. Designated Junior Model 8100, the new gun incorporates many of the features found in the larger models and is intended for use as a second soldering gun in the maintenance or craftsman's tool kit. It is rugged enough to be easily portable for service calls and on-the-spot repairs.

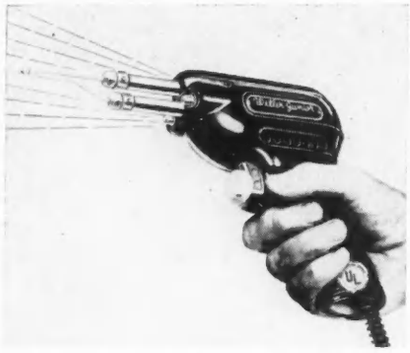


FIGURE ONE: — Weller Junior Model 8100 soldering gun — a new light-weight unit for general purpose soldering.

The new soldering gun illustrated in *Figure* 1 is compactly designed in a durable shock-resistant plastic housing and has a built in transformer. Shorter length from grip to tip enables easier storage and more convenient handling. Instant heat at a power rating in excess of 100 watts is stated to be ample for practically every type of general soldering job.

Trigger control switches heat on or off instantly at the touch of a finger. Dual prefocused spotlights illuminate the work area, dispensing with the need for holding a flashlight while servicing equipment in dark corners.

The "Junior" is equipped with a standard replacable Weller soldering tip which is interchangeable with the new accessory tips for smoothing and cutting. The wiping action of tip fastening nut eliminates contact resistance and oxidation, assures full, constant heat. The standard tip will handle all types of soldering, from repairing electrical or electronic equipment to patching metal surfaces. It is said to be ideal for detail work since it is small enough to ease through crowded places, yet sturdy enough to give long and satisfactory service. Five second heating greatly speeds work.

The accessory cutting tip provides an easy method of cutting plastic wall tile, removing hardened putty from wood or metal sash, etc. The smoothing tip will heat-seal plastic materials, weld thermoplastic casings or fabrics and do many jobs where full, constant heat is required.

Illuminated Roof for Outdoor Telephone Booths

THE GLADWIN PLASTICS, INC., 275 Houston Street, N. E., Atlanta, Ga., is producing a new illuminated roof for outdoor telephone booths made from laminated polyester resin and fibrous glass, designed to fit standard 30″ x 30″ booths.

Proved successful in tests made by many telephone companies, the Glo-Dome is expected to provide a substantial increase in the public's use of booth service, as well as sharply cut illumination and maintenance costs.

FIGURE TWO: — The new illuminated Glo-Dome attracts callers and produces a cheery brightly lit interior that discourages vandalism.

This translucent dome is said to require very little electric power (only 32 watts) yet provides strong nighttime identification. Being translucent, it outlines the sign letters in bold relief and completely eliminates need for exterior lighting in outdoor locations, as indicated in *Figure* 2.

Further economy is effected by a Riply Lightwatchman, a device which automatically turns the light on at dusk and turns it off at dawn.

Cost of purchasing and installing the Glo-Dome is said to be less than the cost of adding lighted signs to an ordinary booth, and more economical than any combination of illuminated signs and fixtures.

In areas where the Glo-Domes are in use, it has been observed that outdoor telephone booths equipped with the domes are used more frequently by the public than those with standard roofing, apparently as the result of the high visibility of the domes which attract many callers. The brightly-lit interior of the booth minimizes robbery and vandalism..

A translucent, perforated breather

section under the front roof overhang permits air to circulate freely for the comfort of the user, and also illuminates the front of the booth. A bug shield keeps the interior of the dome free of insects. Being molded in one piece, the Glo-Dome is leakproof and will not rust, rot, warp, or dent.

Its attractive, functional design eliminates the water curtain front of the booth during rainstorms by draining water to the corners, and the back and side overhangs, permitting flush-banked group installations.

According to the manufacturer, the Glo-Dome is self-liquidating, paying for itself within two to three months.

Reflectorized Telephone Directional Highway Sign

THE GLADWIN PLASTICS, INC., is also producing a reflectorized directional sign designed for night and day use to notify motorists that a telephone booth is available for their use.

The sign is reflectorized and has excellent reflective qualities even at the edge of the headlight area, as *Figure* 3 shows.

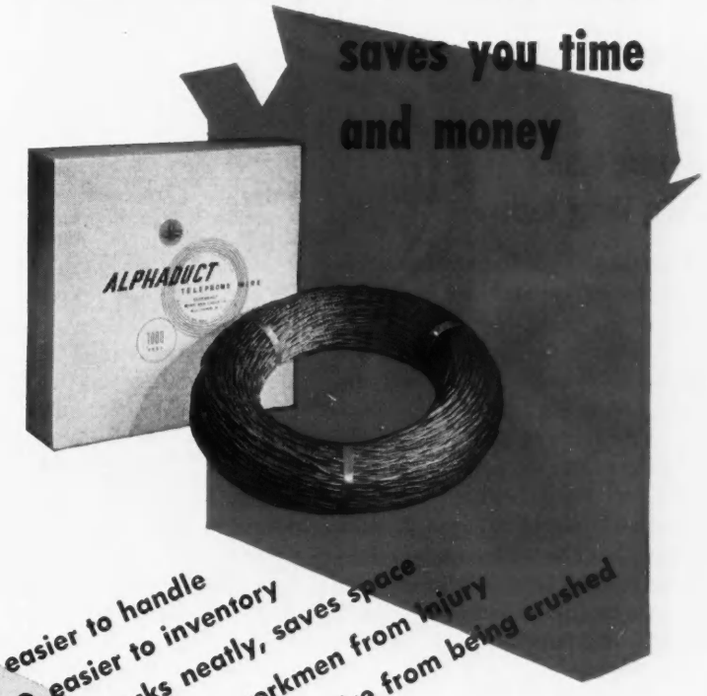
The process used in manufacturing this sign is the result of two years of experimentation by Gladwin. It is

FIGURE THREE: — The new reflectorized "Telephone Ahead" sign by Gladwin Plastics, Inc., effectively points the way to an available telephone booth.

known as a molded color separation process. The process is unique in that both the design or lettering and the background are of the same plastic material (polyester resin reinforced with glass fiber) which in the molding process become integrated into one homogenious mass.

Examination of a cut section of the sign discloses that the background color runs all the way through the material. A look at the cross section that includes a letter shows that the letter is actually depressed and molded into the background as an integ-

ALPHADUCT DROP WIRE
carton packaging
saves you time and money



- easier to handle
- easier to inventory
- stacks neatly, saves space
- saves workmen from injury
- prevents wire from being crushed

Once you start using Alphaduct Drop Wire you will find out that the handy carton packaging has real dollars and cents advantages.

Not only does your wire arrive in perfect condition, but the sturdy carton protects it all the while it's in your warehouse.

The cartons are easier to handle than loose coils. They can be stacked higher without danger of falling and the wire on the bottom will not be crushed or bent. Space is saved, inventory taking is simplified, and the possibility of injuries to workers from tumbling coils is removed.

We try to make Alphaduct the finest, longest lasting drop wire money can buy. Quality materials are used throughout, step-testing during every phase of manufacture assures uniform high standards. Alphaduct drop wire is dated with a color coded thread so you can tell for sure how long it lasts.

Try Alphaduct Drop Wire

ALPHADUCT WIRE AND CABLE COMPANY • MILLTOWN, NEW JERSEY
NATIONAL DISTRIBUTORS • LEICH SALES CORPORATION, CHICAGO, ILLINOIS
REGIONAL DISTRIBUTORS • PANKEY SUPPLY CO., CHARLOTTESVILLE, VA.
THE LINDSAY TELEPHONE SUPPLY CO., CLEVELAND, OHIO

ral part thereof. The letters may be reflectorized. The glass beads are locked into the letters and can't peel off. Because of the nature of the material from which the sign is made, it will not chip or deteriorate.

The new sign measures 24″ x 39″ and bears the reflectorized inscription "TELEPHONE AHEAD." It is available alone with an aluminum edge trim, or as a complete kit with sign panel, cross angles and upright posts.

New Taping Gun for Wrapping Wiring Cables

THE CABLING of electric wiring is claimed to be speeded up from two to ten times using plastic tape dispensed from a new "taping gun" marketed by Minnesota Mining and Manufacturing Co., St. Paul, Minn.

This "Scotch" taping gun, Model E-2, (*Figure* 4) is specifically designed for ⅜-inch-wide "Scotch" brand plastic electrical tape No. 33. Weighing less than 20 ounces with a 36-yard role of tape in the circular magazine, the lightweight gun makes it possible to bundle the wires and cut the tape in a single easy motion taking approximately one second.

FIGURE 4: — The new Scotch taping gun is designed to speed up the cabling of electric wiring.

In use, the tape protruding from the end of the gun is stuck to the wires by the thumb, threaded around the bundle by the curved tip, and then cut with a touch of a thumb button. The end of the tape is pressed down to complete the wrap. The slender, 10½-inch, curved tip serves as a convenient "needle" to thread the tape around wires on a cable layout board or in spots which would be difficult to reach.

With the exception of the grip and cutting button, which are molded from high-impact styrene plastic, the taping gun is of all-steel construction. It is stated that the use of plastic tape for cabling of wiring as compared to previous methods using twine results in drastically reduced time and cost, elimination of any danger of cutting the insulation and freedom from attack by fungus.

Fastener Selector

HERE IS A new pocket-sized selector which gives at-a-glance guidance in the proper selection of fasteners, discs and charges used with powder-actuated tools.

The selector, constructed of laminated cardboard, is designed so that an immediate cross-line reading can be obtained by matching a sliding scale indicator with hardness and thickness data for each use in steel or concrete. Compact reference tables also indicate the proper charge.

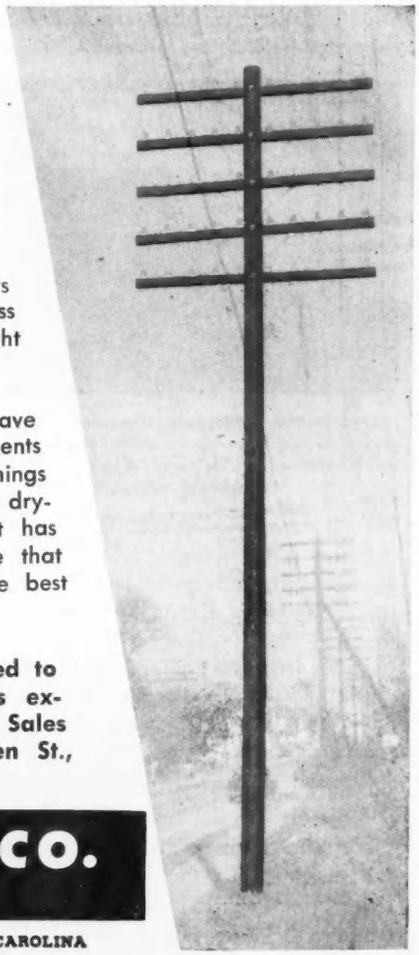
Selectors may be obtained without charge from Ramset Fasteners Division, Olin Industries, Inc., 12117 Berea Road, Cleveland 11, Ohio.

MORE THAN A
QUARTER CENTURY PROGRESS
IN POLE PRODUCTION

On the left is a Taylor-Colquitt pole set 26 years ago. Still sound and serviceable, it nevertheless stands in sharp contrast with one on the right which was recently installed.

For to good timber and good treatment have been added many improvements and refinements during the years that have passed. In such things as timber selection, machine trimming, vapor drying and precise treatment, Taylor-Colquitt has set constantly higher standards to insure that Taylor-Colquitt poles shall always be the best that can be obtained.

Taylor-Colquitt poles are distributed to independent telephone companies exclusively by Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7, Illinois



TAYLOR-COLQUITT CO.
SPARTANBURG, SOUTH CAROLINA

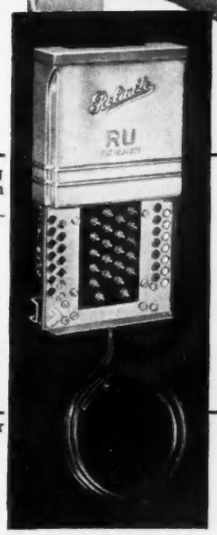
PLANTS AT SPARTANBURG, SOUTH CAROLINA AND WILMINGTON, NORTH CAROLINA

RELIABLE "RU"

REMEMBER THIS CODE—

— and, Mister Boss, you will have unprotected cable terminal efficiency second to none. The Reliable "RU" is simple, rugged and weather-proof, which should give you every thing you want in a terminal, all in this one field-proved unit. Yes, it's been in the field for many years, but has been under constant redevelopment and redesign since it was introduced. The latest improvements include a new cable soldering nipple and expendable cable guard, a new cable chamber lock, improved guide rings, new type gaskets for perfect sealing, and others. It's easy to install, simple to wire and practically maintenance-free. Remember the code — "RU" — and you can't go wrong.

RELIABLE ELECTRIC COMPANY
3145 Carroll Avenue
Chicago 12, Illinois



Capacity	Height Overall	Stub Data	Shipping Wt. Each Pounds
6 Pair	11"	Less Stub	4
		With 6' Stub	7
11 Pair	11"	Less Stub	4½
		With 6' Stub	7½
16 Pair	12½"	Less Stub	5
		With 6' Stub	9½
26 Pair	16"	Less Stub	8
		With 6' Stub	14

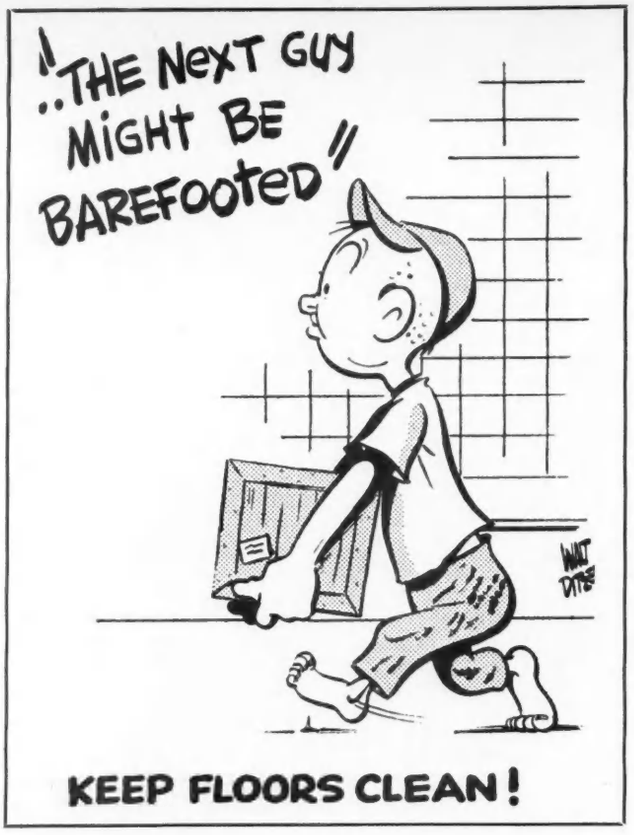
Furnished with 6 ft. No. 22 AWG double wrap paper lead covered cable.

Reliable

Telephone Protective and Terminal Equipment for all Station, Line and Central Office Needs.

OVER 45 YEARS' SERVICE TO THE UTILITIES

Reducing ACCIDENT COSTS *through* SAFE WORK METHODS



MOST EMPLOYERS realize that it is their responsibility to search out and correct conditions that may lead to accident and injury. But it is a new idea to many employers that it is up to them to determine safe work methods and teach methods to their employes.

Two factors are necessarily present in every injury: there must be some degree of hazard, and there must be an unsafe act or some other form of human failure. While much can be done to reduce the hazard factor, it can never be wholly eliminated. Consequently, in addition to all practical physical safeguarding, safe work methods and practices must also be developed and followed continuously.

The development of safe work habits — employe behavior — is clearly a responsibility of the employer. Legal recognition of this responsibility is found in the requirement that compensation must be paid for injuries "arising out of and in the course of employment."

More compelling, still, is the fact that unless the employer accepts this responsibility, safe work habits just won't be developed. Few persons of their own initiative will develop safe ways of doing their work. Systematic analyses of the hazards involved, plus systematic training and supervision, are required. Employers must meet the need by organizing and supervising a continuing program of safety education and training; first, for their foremen, and second, through them for all their employes.

An effective safety program must include both plant and equipment safety and the use of safe work methods. If the accident frequency rate in a company is higher than in other companies with similar equipment, habits and unsafe working methods are often at the bottom of the trouble. It is usually not a particularly difficult job to develop safe work methods. It does take common sense, a knowledge of the work, and the will to achieve safety.

Determining Safe Work Methods

THE OVER-ALL operations, in even a small company, look complicated when viewed as a whole. If the problem is broken down to its elements, however, it is generally solved quite readily. Similarly, in making a job study it is necessary to single out each distinct job or operation and then take it apart, down to the various movements the worker makes in doing each segment of it.

The second step is to streamline the operation by discarding any motions that are unnecessary.

The third step is to examine each remaining motion to determine the safest way of doing it.

The fourth step is to determine the way in which the motions fit together

this theatre is never ...

snowed under with calls for program information!

In theatres and drive-ins, Peatrophone telephone-answering service is being enthusiastically accepted by theatre managers as the perfect solution to two of their most troublesome problems. Not only does Peatrophone leave their key personnel free for important duties during rush hours — but it also does an excellent public relations job, giving out program information that is accurate, clear, and packed with enthusiastic sell.

For the first time, theatre management can be certain that answers to calls for program information are delivered exactly in the form desired — *because the manager himself can record the story of each new program in a matter of minutes* — and the Peatrophone will answer every call, giving the 1000th caller the same courteous, enthusiastic answer as the first. One recording will cover an unlimited number of calls! Best of all, this wonderful service costs the theatre only a few cents a day on the phone bill.

Telephone companies who are handling this ingenious and helpful device, are finding Peatrophone's popularity rewarding — IN THE FORM OF A STEADY NEW SOURCE OF INCOME FOR THEIR COMPANIES. Write today for complete information and literature on Peatrophone — your new source of income.

Note: Selective harmonic ringing subsets now available — — all frequencies.

TELEPHONE ANSWERING & RECORDING CORP.
342 Madison Ave. New York 17, N. Y.

best to make the job as safe, efficient, and easy as possible.

A study of this kind can be made, either for a job assigned to one worker or to an operation which is performed by one or more workers who may also have other duties. In the case of a simple job, like the one described below, such a study is easy to make. With practice, it is possible to analyze more complicated jobs in similar fashion.

EXAMPLE

OPERATION:—Transferring boxes.

DESCRIPTION OF OPERATION: — Worker lifts filled box 2′ x 2′ x 1″ — weight about 40 pounds — from wooden pallet; turns; places box on moving conveyor belt between other boxes already on belt; turns back for next box.

Step One: — lifts box from pallet;

Step Two: — turns around with box;

Step Three: — places box on conveyor belt;

Step Four: — turns around to get next box.

HAZARDS: The next consideration is the hazards of each movement. By observation these may be found to be as follows:

Step One: — boxes may fall from pile; worker may catch fingers between boxes.

Step Two: — worker may drop box on foot; weight of box or incorrect posture may cause back strain or hernia.

Step Three: — worker may catch fingers between box and conveyor or belt; worker may catch fingers between box and other boxes on belt; clothing may be caught by revolving idler on conveyor.

Step Four: — defect in flooring may cause worker to stumble or trip.

What should be done to control these hazards? The boxes must be piled correctly, so that they will not fall. They must not be piled too high for safe and convenient handling. Gloves should be used to protect the worker's hands. Safety shoes should be worn to prevent injury if he drops a box on his foot. A suitable slide is needed, so that the worker can push the box onto the belt without coming in contact with it or with the boxes already on the belt. A guard over the idler pulley is also needed. Flooring should be smooth, unobstructed, and not slippery. The spot where the truck operator is to place the pallet should be determined

and marked on the floor. The operator should then be instructed accordingly.

Such an analysis leads directly to the safe work methods required for the job. With such information, the supervisor and the worker can combine their knowledge and experience and arrive at safe, efficient, and practical work methods. The operating executive must stimulate action, maintain supervision, and commend accomplishment.

For the job described above, the safe sequence of action would be something like this:

(1) Place right hand on right far corner of box and left hand on left bottom corner.

(2) With back straight and knees bent (when necessary) lift with the leg and arm muscles.

(3) Turn to the right; take two steps forward to conveyor belt.

(4) Lower box onto slide; push box onto belt when open space on belt reaches mark four inches before slide.

(5) Turn to left; take two steps forward to pallet.

Putting Safe Methods Into Practice

BEFORE BEING put into use, the new work method should be thoroughly tested. This can be done, first by demonstrating it to workers and supervisors doing similar work and asking for their comments, and, second, by studying it in operation to make sure no hazard has been overlooked and that no new hazard has been introduced. *If it stands these tests, the new method can be adopted as standard for the job.*

Every worker who performs an operation should be trained in the safe method, even if he does the job only once in awhile. By giving this training to substitute and relief workers as well as to the regular operator, the likelihood of accidents is greatly reduced. Every new employe assigned to this work should be given training in the safe method and impressed with the importance of following it unfailingly.

In all such training it should constantly be borne in mind that *telling is not training*. Men acquire skill in "doing" by doing. The most effective approach to training a man in any new procedure is: tell him how and why; show him by doing it; have him do it; coach and correct him until he has mastered it; supervise him to be sure that he continues it.

It may take considerable time before all workers acquire the habit of using safe methods. During this time it is the supervisor's responsibility to make sure that the employes do not slip back into old unsafe methods.

In addition, management should check regularly to see if any changes in materials, machines, or conditions have affected the method being used. In the sample process described, for example, if the weight or size of the boxes were increased or decreased some change might be needed in the method of handling them.

On a new job, a safe work method should be determined before any workers are assigned to it. Finally, the location and position of machines or processes may be affected by safety requirements. If these can be determined beforehand, it may save making expensive changes after final installation.

The safety of the workmen is the primary purpose of safe work methods. But there are other advantages, too. Workers who know they are using safe work methods typically turn out more work than those relying on haphazard or traditional methods. The quality and uniformity of production are improved. Cost of the product or service is often lowered. Injury frequency rates — and hence compensation insurance rates — are reduced. Shop morale is strengthened. Relations between workers and management are improved by a joint approach to a problem that concerns both. — *Adapted from a report issued by the Small Defense Plants Administration.*

Coming Up!

OCTOBER 11, 12, 13

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The 1954 Convention of

UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION

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INDEPENDENT OPERATING TELEPHONE PEOPLE and THEIR MANUFACTURERS AND SUPPLIERS*

GENERAL SESSIONS	CONFERENCES
Topics of Outstanding Importance	Plant-Traffic-Commercial-Accounting
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Wonderful Food • Entertainment • Fellowship

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**Attendance of Manufacturers and Suppliers Representatives Limited to Member Companies*

Small Company Talk

Insurance For Employes

By BILL CORMAN

IN THE LAST issue Mr. Corman discussed your insurance program in general terms. In this article he discusses the forms of insurance which apply to your employes.

HI, NEIGHBOR! In a recent small company talk article, we talked about your insurance program in general terms, but left for further talk the subject of those forms of insurance which apply to your employes.

You have all heard many stories about insurance companies who will insure you for anything under the sun, about models getting their legs insured, about outdoor entertainments buying rain insurance, etc. So there are about as many types and kinds of insurance as you can possibly imagine. Just the simple term "Life Insurance" covers a subject that most people can't learn completely in their lifetime. These short articles, then, are designed principally to start you to thinking about your insurance program, rather than with any idea in mind of telling you about all the different kinds of insurance and which to buy and not to buy, and how much.

Now about the insurance that you may buy which covers your employes. First, most states have a Workman's Compensation Law, which requires you to either buy or maintain your own program of insurance against on-the-job accidents.

A lineman falls off a pole and breaks a leg. A construction man lets a "flip-up" put him in contact with an electric high voltage line. That sort of thing. Your state very probably has a law which says that you must provide benefits for your employe in case of such accidents. The law will probably specify a minimum benefit, and if it has been very many years since the law was passed, the minimum benefit may not actually be enough to provide what needs to be provided for your hurt employes. So you may want to carry more than the minimum — at least it is something that you should look into. The insurance is usually called Workman's Compensation Insurance, and it is probable that if you are not carrying such a policy with a recognized insurance company, you are assuming a big risk.

But note that such insurance is

on-the-job insurance. Anytime an employe is hurt off the job, he is assuming his own liability. Many employers help him provide such insurance for himself. All this talk and advertisement in the last few years about sickness, accident, health, hospital, surgical, etc., insurance is this type.

Where companies contract with an insurance company for all their employes for this type of insurance, it usually comes cheaper than for each individual to buy his own. Probably the most widely known of the hospital and surgical insurances of this type is the Blue-Cross Blue Shield insurance. But all of the larger companies have now developed this type of insurance and your choice of companies is almost without end.

A word of warning, however. In this, as in all comparatively new types of insurance (the same thing was true of automobile insurance when it was new) you must be especially careful of your company. Many fly-by-night companies are getting out policies which seem to provide good coverage up until the time the pay-off comes and then. there develop more loopholes in the "fine print" than you would think possible.

Income Insurance

IN THIS TYPE of insurance you can also provide income insurance, that is insurance which will pay all or part of an employe's salary while he is sick or hurt and unable to work. These policies are as simple or as complete as you care for, but of course the more risks you cover, the more is the cost of the policy.

Most companies make all or part of such insurance voluntary on the part of the employe — that is, the employe can buy the policy or not, as he pleases. Many companies pay a part of the cost of such insurance. For example, if a certain policy cost $5.00 a month for a certain employe, the employe would have the right to say whether he wanted to take it or not, and if he did take it, the company might pay $1.00 or more or less (the percent varies drastically from company to company) of the cost for the employe.

It might also be recognized here that some companies carry their own insurance of some or all of these types. If your company, for instance, pays an employe's salary straight on through a sickness, then you are carrying your own income insurance. It is up to you to determine which is to your advantage.

"A quarter's not supposed to be as good as a dollar—but it goes to church more often!"

Pensions

IT IS WITH some hesitancy that I even mention the next subject — pensions and related subjects. The entire field surrounding this subject is so complex and so extensive that the small company telephone manager feels himself lost in a fog when he begins to think about and discuss it.

There are so many controversial questions in connection with it, further confusions arises. Should it be based on insurance, or on a trust fund, or some other way? Should the company pay all, or part, or none of the costs? Should it tie in to the Federal Old Age pension system? Should the employe build up a "vested interest"? What are the tax considerations? How is the "past service liability" to be handled? Shall it cover all employes, or only specifically defined employes? Will or must or should you deal with or through a union on the question?

Fortunately, or unfortunately, however you look at it, the question used to be beyond the scope or ability of the small company. Fortunately or unfortunately again, it no longer is. Several companies, banks, etc., have developed plans specifically designed for use by the small telephone company. Because of the wide industry publicity given the first and the wide national publicity given the second, you have probably already heard of the Chase National Bank Pension Plan designed specifically for the Independent Telephone Industry (based on the trust fund idea) and the M.O.N.Y. Module Pension Plan developed by The Mutual Life Insurance Company of New York, designed for small business generally.

The subject is, therefore, whether you like it or not, one which can rationally be considered by a small telephone company at the present time. These plans are now within our reach, both cost wise and in understandability (at least to a degree where we can discuss the subject).

Any plan developed for you by a reputable company will be designed so that the cost of the plan is a tax-deductible item. The plan must meet certain specifications to be classified as an approved plan, which means the cost is tax deductible, and it is mentioned here merely as something that you want to be sure of before you go too far.

Another thing is commission approval. Whether or not your commission must approve your plan will depend on your state law, or on the law defining the powers of the FCC, but there are certain rather tricky questions involved which you would do well to get straight with your commission so that there will be no future kickback.

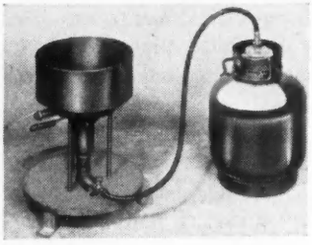
For example, the "past service liability" we mentioned briefly earlier. This is the liability that exists at the start of the plan for those employes who are already working for you at that time. Thus, at any time you choose to start a plan, some employes will have already earned part of their pension because they have already worked for you several years. You can ignore it of course, but this is a bad penalty on your older employes — the very ones you hope to encourage to stay with you.

So what is usually done, is that this past service liability is computed in dollars and cents at the start of the plan, and the cost is divided up to be paid along with the regular cost of the plan over a given number of years, usually 10 or 20 or 30 years. For example, if the cost of your plan is $300 per month, and your past service liability is $12,000.00, you could pay off that past service liability by paying $100 per month for 10 years (120 months) in addition to the regular cost of $300. (Accrued interest would change these figures some, so that the cost would probably be something in excess of $100 per month, and the total cost something over $400.)

Now, to return to the Commission, one of the things you must find out about is whether or not it will allow

Insto-Gas
T M REG U S PAT OFF

JUMBO FURNACE



FOR UTILITY CONSTRUCTION WORK

Now Insto-Gas offers JUMBO, an instant lighting furnace that will melt large quantities of lead, babbitt, zinc and compounds quickly. Only 15 minutes heating time required for 200 pounds of lead.

The broad base of the JUMBO furnace permits use on uneven or soft ground, and a convenient bail handle makes it easy to move on the job. Cast iron melting pots with pouring lips, tilting lugs and tilting hooks are available in 100 and 200 pound capacity.

When a 50 ft. connecting hose is used the JUMBO furnace can give service over a wide area without moving the cylinder. The flame control valve is located on the furnace.

INSTO-GAS TORCHES

Utility Maintenance departments use Insto-Gas torches for soldering, sweating copper pipe fittings, preheating and thawing.

INSTO-GAS EQUIPMENT IS LISTED BY BOTH UNDERWRITERS LABORATORIES AND FACTORY MUTUALS LABORATORIES

Write today for new folder on Insto-Hot Salamanders.

Please send information on Insto-Gas to:

Name .....

Address .....

TE .....

Insto-Gas Corporation · Detroit 7, Mich

you to charge this $100 per month against current operations, when it is rather obvious that it is not a current cost. Practically all commissions are coming to realize, however, that these plans must start somewhere, and consider that the past service liability is one of the necessary costs of getting started, and are allowing the full cost as a current operating expense for rate determination and other purposes. But it is a point which you should definitely clear up completely with your commission.

One little word as to whether or not a telephone company is justified in doing it — that is, establishing a pension plan, which will increase the operating costs of the company, and, at least in the long run, increase the price of the service to the subscriber. Have you ever looked at it this way? When any of your employes buys an automobile, a can of food, or rides on a train, or does almost anything else for which he spends money, part of the cost of the auto, the can of food or the train ride, went to pay for pensions for the people who made the article or the service. When your telephone employes — or your subscribers buy something, part of the price is the cost of a pension for someone else. Why shouldn't the subscriber be just as willing that part of the price he pays for his telephone be the cost of a pension for the employes who make his telephone possible?—THE END.

"QUOTES"

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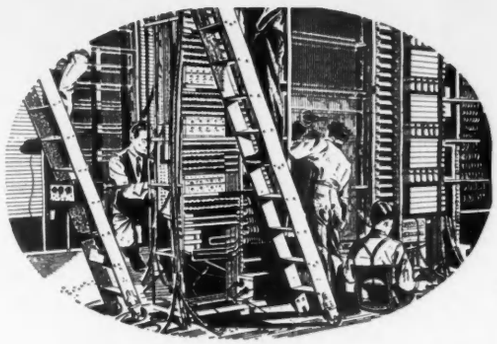


Questions and ANSWERS

Conducted by JAY G. MITCHELL

IN THIS ISSUE Mr. Mitchell discusses — (A) Explanation of Rule-of-thumb Formula for Determining Total Number of Connecting Circuits for Entire Office Required for Known Busy Hour Telephone Traffic; (B) Definition of "Trunk Time" in Manual Offices; and (C) Severe Inductive Interference.

QUESTION: — *In the May issue of* TELEPHONE ENGINEER & MANAGEMENT *(page 73) you express the following formula for estimating trunk circuits.*

Number of Connecting Circuits is
$$TC + 2.7\sqrt{(1-T)}$$

The first half of this relationship makes sense. Something seems to be wrong with the second term of the expression. This seems to us to say that the greater the holding time the fewer the circuit requirements. I would appreciate your supplying me any explanation as well as any additional "Rule of Thumb" methods for setting up the equipment requirements to meet traffic conditions in telephone plants where such methods can be employed.

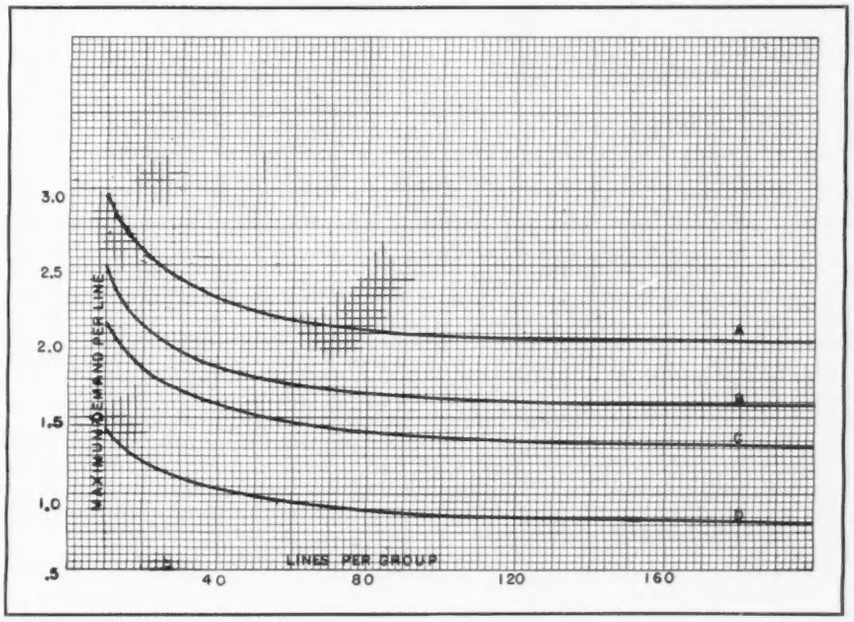
ANSWER: — This inquiry, which is substantially quoted above, indicates a careful effort to apply the formula given. The one thing that has been overlooked is that *"T" is the average holding time in fractions of an hour.* It is suggested that this correspondent apply the formula to an imaginary condition in which 5,000 calls is the total busy hour load and, in one case the average holding time is 5 minutes (0.0833 hours) and in another case in which the same number of busy hour calls is handled and the average holding time is 2½ minutes (0.0416 hours). It is thought that the error pointed out by this inquiry consisted in using the actual average holding time instead of the average holding time in fractions of one hour. If this is not clear please write in again.

Note carefully that the solution of this formula gives the total number of connecting circuits for the *entire office.* The number that must be provided for the service from groups of various numbers of circuits is the result of this formula qualified by an application of the factors set out in the curves shown in the July 1954 issue of FORTNIGHTLY TELEPHONE ENGINEER is reproduced again in this issue for reference. The application of the data in the curves shown below is as follows. The solution of the formula which is the subject of this inquiry gives the number of connecting circuits required for service with only a reasonable delay in *the entire office.*

It is obvious also that when this number of connections is required *for the entire office* there may be some groups of circuits that are overloaded and some groups that are not developing their share of the overall load at the same time. By groups of circuits it is meant that all the calling telephone circuits in any telephone office are necessarily divided into groups each group having access to a *part of all the connecting facilities* of the office only.

In manual switchboards, for illustration, a portion of all the subscribers' lines must be answered by a group of cord circuits in routine handling of traffic. In mechanical switching likewise calls from the one group of subscribers' lines must be completed by the switching facilities that have access to that one group in the routine handling of the traffic. It has been found that the ratio of the number of connecting circuits to be provided for any group of subscribers lines to the number of subscribers' lines in the group is increased as the number of subscribers' lines in the group is decreased.

This is the law that is set out in the curves shown. If the average



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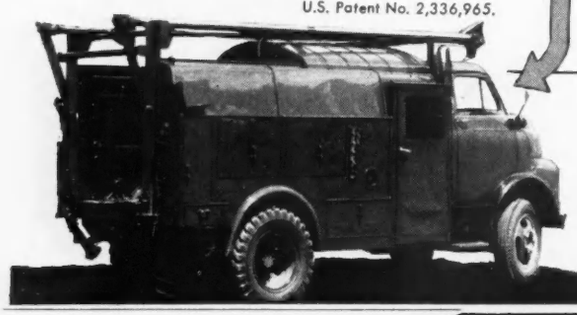
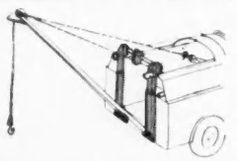


Derrick raised by simply engaging the winch.

Vertical position—winch rotation reversed.



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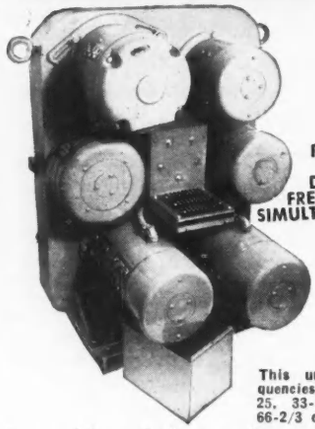

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number of calls per line circuit for the busy hour for *the entire office* is 0.6 calls and the number of lines having access to one group of connecting circuits is 100 then the estimated number of connecting circuits determined by the formula in the inquiry must be based, as shown by the curve, on a basis of 0.7 calls per line for the entire office in order to provide adequate connecting circuits for reasonable traffic demands per group.

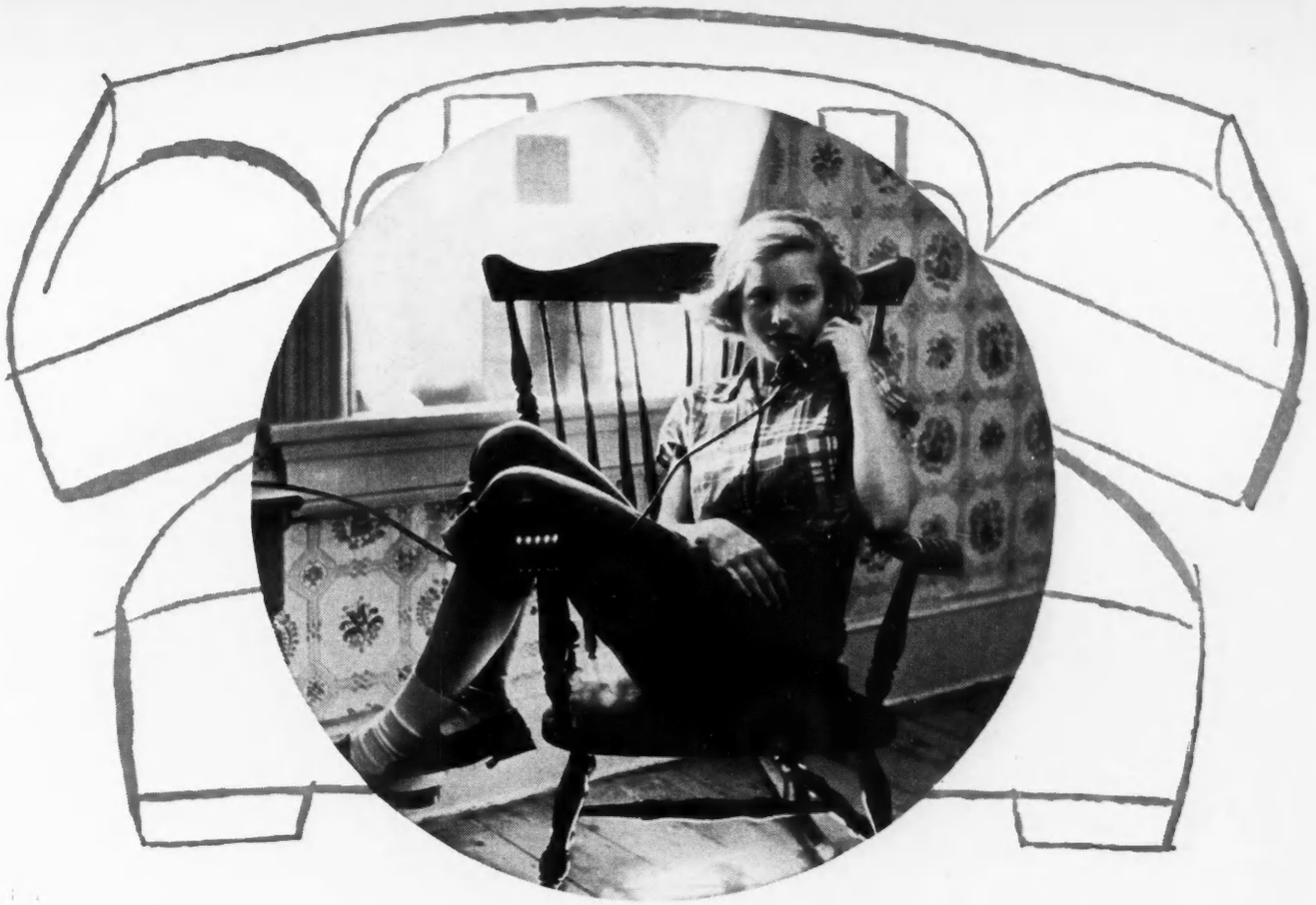
The four curves in the figure apply to overall busy hour calls per line in the entire office and must be taken into consideration because of the effect of the group factor.

Curve "A" is based upon an average of 1.6 calls per line in the busy hour for the entire office.
Curve "B" is based upon an average of 1.2 calls per line in the busy hour for the entire office.
Curve "C" is based upon an average of 1.0 calls per line in the busy hour for the entire office.
Curve "D" is based upon an average of 0.6 calls per line in the busy hour for the entire office.

This Rule-of-thumb method of forecasting traffic requirements may appear to be very complicated. For that reason any further inquiries are welcome and will be carefully considered and the solution will be given if requested.

QUESTION: — *Will you please define the term "Holding Time" when used in telephone traffic data? We are trying to work out some improvements in our service including more satisfactory instructions to our operators, more logical numbering of the telephone circuits and a possible addition to our switchboard.*

ANSWER: — Since this company is operating purely manual equipment the "Holding Time" may be assumed to be the same as the total "Trunk Time." In conventional manual equipment this "Trunk Time" is the total time required by the operator to perform the duties incidental to completing the connection, the time devoted to actual conversation, the time required by the called subscriber to answer the telephone and the time required by the operator to remove the plugs leaving the connecting circuit available for succeeding calls. To some extent all these elements of "Trunk Time" are controllable by the telephone company *except the time* that the equipment is unavailable be-



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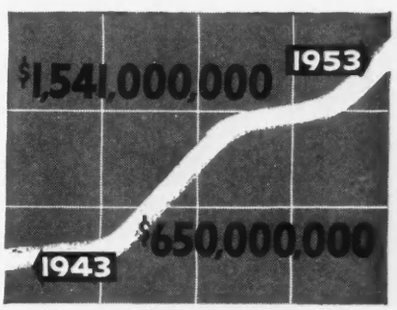

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cause of actual conversation or additional time controlled by the subscriber such as waiting.

For instance it is possible to a noticeable extent to reduce somewhat the average time taken by the called subscriber to answer the telephone. Any reduction in the average "Trunk Time" will contribute directly to service improvement and more efficient operating.

QUESTION: — *I am writing you in regard to two metallic telephone lines. One is a trunk line three miles long and is under a power line or high line one and one half miles and is transposed every half mile and is new number* 12 *B.B. The other line is a party line and is six miles long, it has three miles old wire and three miles one new and one old wire number* 12 *B.B. and is under power line two miles and is transposed every eight poles for three miles. This power line carries* 7200 *to ground.*

Now when it is dry these two lines are hot, in wet weather they are not so hot. The trunk lines carries 50 *volts. Do not know just how hot the party line is but it is so hot you can hardly work on it. The power company claims I will have to transpose these lines more to get rid of it, when it is damp they are nice and quiet as any metallic line. Now, what would you advise me to do with them and do you think transposing will take it out? If so how often should I transpose them. Hope to hear from you by return mail?*

ANSWER: — This inquiry sets out a very difficult situation for this telephone company. The facts as stated are not sufficient to afford any basis whatsoever for any remedial plant changes. In these circumstances it can only be suggested that the matter be discussed with the Engineer of the COMMISSION in your state and that all the facts be presented for consideration. In our opinion a survey of the relative age and condition of the telephone circuits, whether they had a prior right of way on the troublesome route or not, careful inspection of all drops and tree foliage that might afford the possibility of crosses between the communication wire and the supply circuit, length of the separation between the two plant members and other factors; is urgently required.

For personal safety of the telephone operators and other circuit subscribers it may well be necessary to install insulating transformers in each circuit also. If any other suggestions are desired please send in sketches prepared with knowledge of all conditions by some one who is in possession of all the facts.—THE END.

"Suppose a half dozen of us are seated around the walls of a very dark room. We are told that somewhere in the open middle space is a chair. Who would find it? Not those of us who sat still and philosophized about where chairs are placed in rooms. The fellow who would locate it is the one who'd get up, then walk and stumble around until he discovered it. Nobody ever found anything while sitting down."—(Chisholm, Minn., Free Press).

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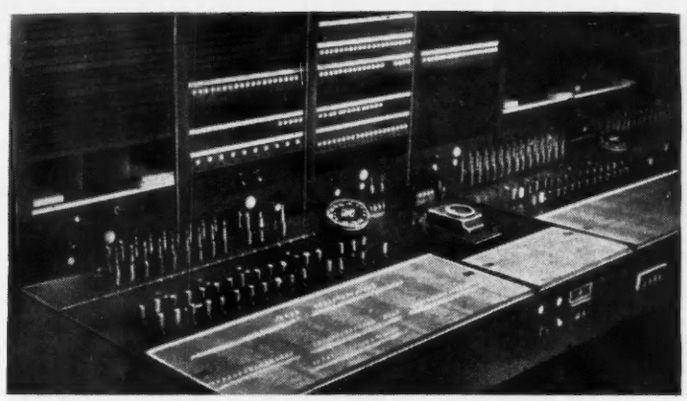

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(Continued From Page 47)

These development courses are apparently meeting many objectives of American industry to say nothing of the benefits they hold for the participants.

Conclusions

IN SUMMARY, the advanced management seminars as referred to herein suggest certain objectives which are — to broaden management's point of view — a capacity for analyzing problems from a broad company-wide rather than a departmental viewpoint — an understanding and appreciation of company-wide interrelations among all departments and functions of the business — a fuller understanding of the social, political, and economic forces which influence the decisions of management — to develop a deeper appreciation of the human problems in organizations and through this a greater capacity to deal effectively with other people — to develop an understanding of the complexities inherent in the labor management relationship and improve their knowledge in dealing with Unions — to improve habits of constructive thinking and skill in reporting conclusions effectively, both orally and in writing, and a deeper sense of the social responsibilities of business leaders.

We believe that a cooperative movement on the part of interested members of the USITA in sponsoring a program designed for telephone management personnel, combining many of the subjects taught in the universities that are applicable to our industry, augmented with subjects dealing with specialized problems of our business, would be a worthwhile contribution to the industry.

We recommend these management development programs very highly to industry generally and are thoroughly convinced that they would be of material aid to the entire Independent telephone industry.—THE END.

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Do you remember the first day you were a foreman? You had been a good lineman, worked hard, never had any accidents, studied nights, and the "Super" thought your work was all right.

The night before you took your crew out he talked to you and when you left he told you to "Be sure and bring them all back in tomorrow evening." Maybe it didn't sink in then, but you remembered what he said, and before long you were very certain what he meant.

What he was saying was , "You've stayed out of accidents yourself and done a good job, now let's see if you can keep a whole line crew out of trouble." Of course he meant, too, that the "big boss" was looking to him to keep you straight and, by the same token, he was putting squarely on your shoulders the job of working that crew without accidents. And you can bet your bottom dollar he'd never have put you in there if he thought for one minute you couldn't do the job safely.

Your "boss" and management has said to you, "Bring 'em *all* back in tonight." That's your job, and it's a tough one, but *YOU* wouldn't

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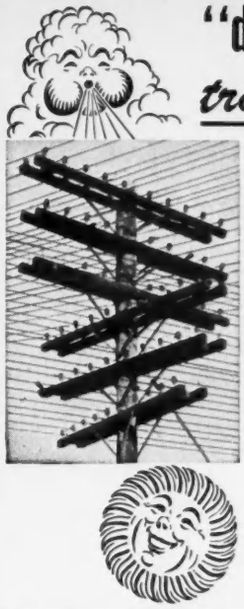

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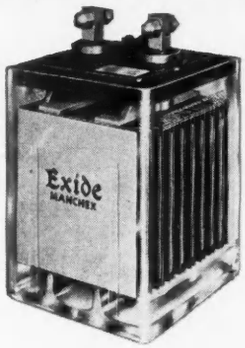

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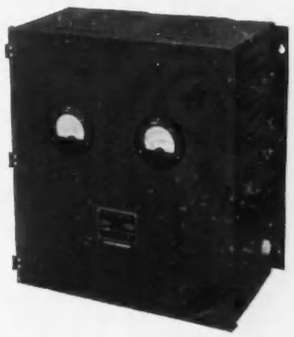

Maintains the close voltage limits required by telephone systems and reduces such common difficulties as incorrect ringing, line noises and lamp failures. The constant potential method of charging prevents battery gassing and water loss. A smaller maintenance crew can handle a greater number of installations.

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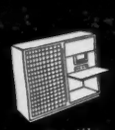
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Measuring Cable and Wire Clearances

(Continued From Page 51)

line would have been in the small conductor or "B" class and the minimum clearance then would have been 8'3".

The foregoing method is necessarily approximate, but provides a safe margin of clearance in situations of supply span lengths at the crossing of up to 250 feet in the heavy loading district. As a rule power lines are built with crossing spans shorter than the normal spacing in the line; hence there will be comparatively few situations found where crossings spans are longer than 250 feet.

It will be noted that the additional increase in basic clearance between the upper and lower crossing spans is greater in the center of the upper crossing span than elsewhere. This is due to the fact that ice loads cause the greatest amount of sag increase in this location than in the rest of the span. For this reason it is desirable that a telephone line should cross under a supply line as nearly as practicable to the nearer supply pole as possible. This is often not a difficult matter, since power companies usually place one of their crossing poles near to the roadway at the crossing to obtain the maximum clearance for their line over the crossing as shown in *Figure* 6.

TABLE THREE—Sizes of Supply Conductors Classified as Small or Large for Use in Determining Minimum Clearances.

Kind of Supply Conductor	A Large Conductor (Smallest Size of Wire)		B Small Conductor (Largest Size of Wire)	
	Solid	Stranded	Solid	Stranded
Amerductor Copper	6	4 4-3 Strand 2-7 Strand	8	6 4-7 Strand
Copperweld	2	4-A 3 No. 8	4	6-A 3 No. 9
Galvanized Steel A.C.S.R.	2	4 2		6 4

Separations in Joint Construction

IN JOINT construction, minimum separations are required between supply and telephone facilities, including wires and cables on each jointly used pole and between the supply wires and the telephone wire

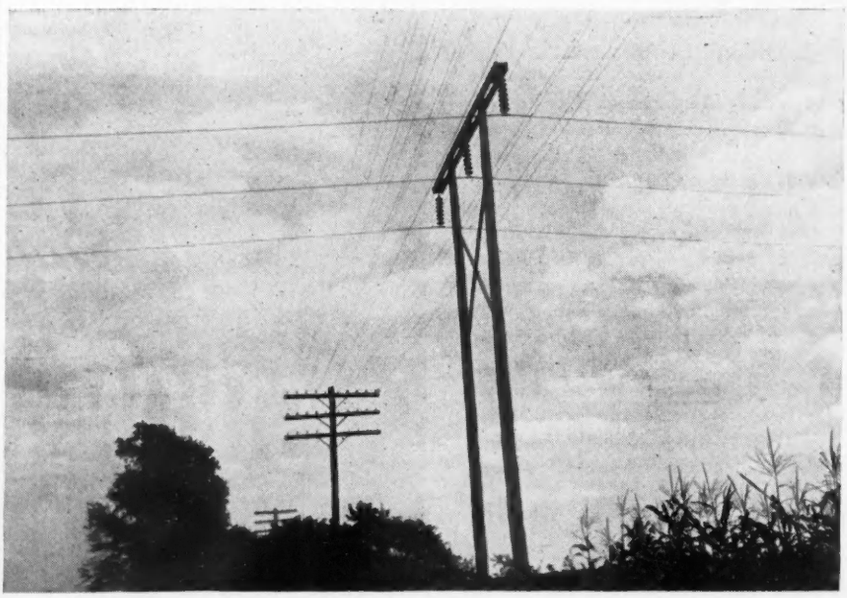
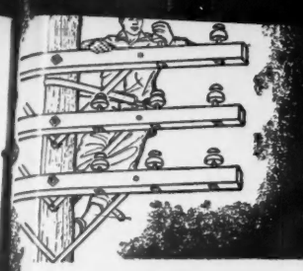
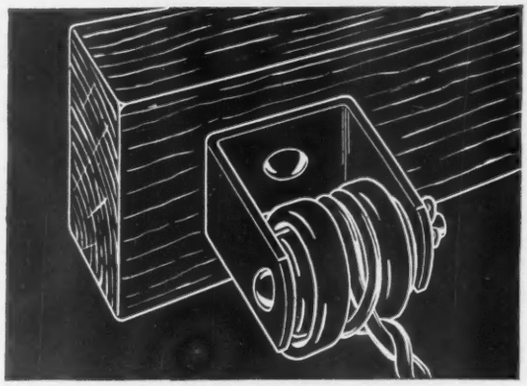


FIGURE SIX: — With the transmission line poles set near the highway crossing, there will be ample clearance between the high voltage wires and the telephone lines crossing underneath.



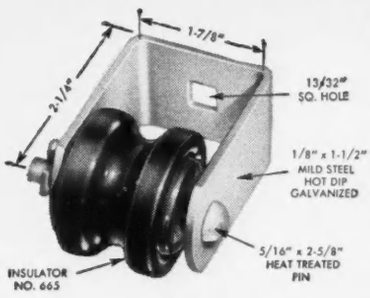
LINE CONSTRUCTION BLUEPRINTS

ITEMS SOME COMPANIES ARE USING TO MAKE LINE CONSTRUCTION WORK EASIER

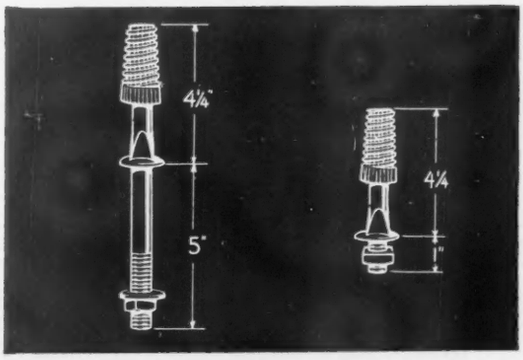


L-M DEAD END CLEVIS

Cat. No. 260084A1



Here's a strong, compact, galvanized-steel clevis which provides a most practical method for dead-ending. May be attached to either pole or crossarm, with a ⅜"-diameter carriage bolt. Square hole keeps clevis from turning. Clevis has ultimate strength of 2500 pounds. Spool insulator (must be ordered separately) will take up to 1500 pounds wire tension.



L-M STEEL INSULATOR PINS
WITH WOOD COBS

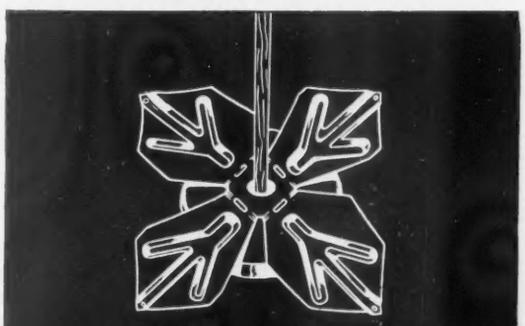
For wood crossarms: Cat. No. 9740, ½" diam.
Cat. No. 9741, ⅝" diam.
For steel crossarms: Cat. No. 9740S, ½" diam.
Cat. No. 9741S, ⅝" diam.

Strong steel pins, hot-dip galvanized, with seasoned oak cobs thoroughly impregnated with paraffin and threaded for 1" insulator holes. Pin for wood arm has square nut and clipped washer; pin for steel arm supplied with square nut only.

L-M 4-WAY PRESSED STEEL EXPANDING ANCHORS
DESIGNED FOR EXCEPTIONAL STRENGTH

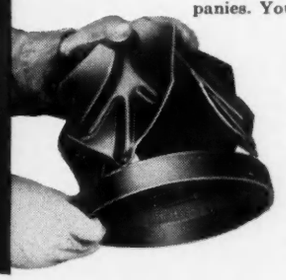
Catalog Number	Diameter—Closed—Inches	Expanded Area—Square Inches	Nominal Holding Power Class—Pounds	Anchor Rod Diameter—Inches	Minimum Mechanical Strengths Without Noticeable Deformation—Pounds
200026B1	8	110	6,000	⅝, ¾	16,000
200026B2	8	125	8,000	⅝, ¾	21,000
200026B3	8	132	10,000	1	24,000
200026B4	8	132	10,000	⅝, ¾	24,000

All 3 sizes are REA-approved, and have been thoroughly tested and approved by major utility companies. You can depend on them to hold!



Notice the additional area inside the center of gravity of two opposed blades which gives utmost area for increased holding power, without sacrificing balance of the anchor.

Heavy steel, with skirted edge to prevent deformation. A nut retainer strap welded to the underside reinforces the hole so that the nut cannot pull through the base plate.



Two-piece design . . . The four blades are formed of a single piece of steel, and are held to the base plate by four small bolts, which simply shear off by tamping. The center hole is extruded downwards. This extrusion provides a bearing surface against the rod to prevent binding; it reinforces the tamping area; and it provides an audible signal when the extrusion strikes the base, indicating full expansion.

154-R

Do You Have a Line Construction Problem?

These are just a few of thousands of L-M line construction specialties. If you have a line construction problem, let us know. We may have standard or special items in stock that will solve it. Ask the North Electric or Kellogg representative, or the L-M Field Engineer. Or write Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

LINE MATERIAL
Line Construction Materials

Sold for L-M
to the independent telephone industry
by
KELLOGG Switchboard and Supply Company
and
THE NORTH ELECTRIC MANUFACTURING COMPANY

and cable in the spans. At each pole in the joint construction arrangement, the required separation between the supply crossarm and telephone crossarm or cable attachment on the pole is 4 feet for supply voltages of 0 to 8700 volts, and 6 feet when the voltage is between 8700 and 50,000 volts. For voltages over 50,000, the clearance is increased at the rate of 0.4 inch per 1000 volts of the excess.

The separations for the supply and telephone crossarms or telephone cable attachment are measured from center to center of the crossarms. Because of the fact that there are other types of attachments to the pole, as telephone drive hooks, guard arm hooks on guard arms above the cable for attaching drop wire, and supply transformers, hangers, and crossarm braces, a slight reduction in clearances is permitted at these points. These vertical separations are 40 inches for supply voltages of 0 to 8700 volts and 60 inches for voltages exceeding 8700. Even less clearances are permitted for span wires of trolley contact conductors and lamp brackets of street lighting circuits on the same pole with telephone facilities under conditions outlined in the National Electrical Safety Code.

Separations between the supply and telephone lines in the span are necessarily less than at the pole attachments on account of differences in the sags of the supply wires and the telephone wires or cable. For supply lines of 0 to 750 volts, the lowest point of the supply span should be above a *straight* line through the telephone attachments (wires on insulators or suspension clamp on cable) on the adjacent poles. Where the voltage is over 750 volts, the lowest point of the supply span must be at least 30 inches above the straight line through the telephone attachments. Where a neutral

Please Turn To Page 90

TABLE FOUR—Minimum Clearance Required for Span Lengths of Supply Lines Crossing Telephone Lines.

Span Length of Crossing Supply Line (Note 2)	Distance From Nearer Support of Crossing Span to Point of Crossing in Feet	Minimum Clearance of Telephone Line							
		Under Supply Service Drops Messengers and Guys		Over Supply Service Drops (Note 4)		Under Supply Wires			
						0 to 8700 Volts (Note 3)		8700 to 50,000 Volts	
175 Feet		2'0"		4'0"		4'0"		6'0"	
		A	B	A	B	A	B	A	B
	100'	2'5"	2'9"	4'5"	4'9"	4'5"	4'9"	6'5"	6'9"
200	75'	2'5"	2'9"	4'5"	4'9"	4'5"	4'9"	6'5"	6'9"
Feet	50'	2'0"	2'3"	4'0"	4'0"	4'0"	4'0"	6'0"	6'0"
	25'	2'0"	2'0"	4'0"	4'0"	4'0"	4'0"	6'0"	6'0"
	110'	2'9"	3'6"	4'9"	5'6"	4'9"	4'9"	6'9"	7'6"
225	75'	2'7"	3'4"	4'6"	5'2"	4'6"	5'2"	6'6"	7'2"
Feet	50'	2'1"	2'8"	4'0"	4'2"	4'0"	4'2"	6'0"	6'1"
	25'	2'0"	2'0"	4'0"	4'0"	4'0"	4'0"	6'0"	6'0"
	125'	3'2"	4'3"	5'2"	6'3"	5'2"	6'3"	7'2"	8'3"
250	75'	2'10"	3'10"	4'8"	5'8"	4'8"	5'8"	6'7"	7'7"
Feet	50'	2'3"	3'0"	4'0"	4'3"	4'0"	4'3"	6'0"	6'5"
	25'	2'0"	2'0"	4'0"	4'0"	4'0"	4'0"	6'0"	6'0"

Notes: (1). Figures in Column "A" are minimum clearances for large supply conductors while those in column "B" are for small supply conductors. See Table 3 for classification of these conductors, (2) For 3-strand conductors with wires 0.09 inch or smaller (copperweld 8A, 9½D, 3-No. 12 and Amerductor No. 12), the clearance shown in the table are for spans 25 feet shorter; (3) When a supply line of 750 to 8700 volts crosses over a telephone line within 6 feet horizontally of a telephone pole, the basic clearance shall be 6 feet instead of 4 feet; (4) Minimum permissible clearance to depend on length of telephone span crossing over supply service drop.

Construction and
WITH THE DOUBLE
STROMBERG-CARLSON
LEADING

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the aristocrat of stationary batteries

Many Planté batteries are still in active full-float service after twenty, thirty, even forty years! That's because Planté plates are heavy, solid sheets of pure lead. In these batteries Gould has eliminated the primary cause of self-discharge, capacity losses and shortened battery life. Cut maintenance, charging and replacement costs to a minimum. Choose Planté.

Made by
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reversible • weatherproof

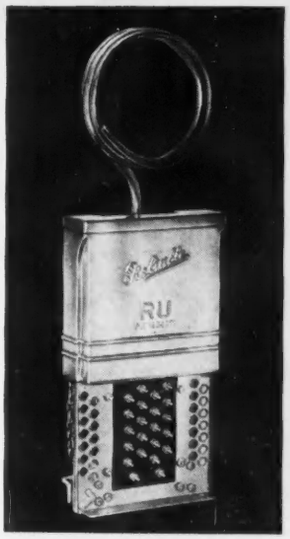
reliable "RU" cable terminal

The results of Reliable's policy of endless research and testing of parts and materials, together with a rugged design simplicity are apparent in this Reversible, Unprotected Terminal.

The flat fanning face plate, in combination with a sturdy non-corrosive aluminum cover which surrounds the wires both front and back, creates an unusually weatherproof terminal.

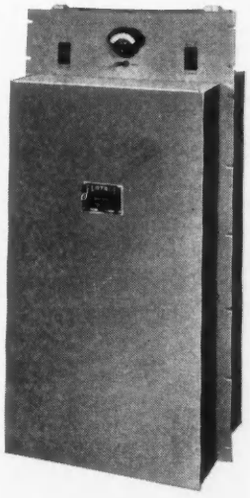
The reversible sliding aluminum cover also permits stub to be mounted at either top or bottom.

Such other features as: detachable mounting bracket; aluminum alloy chamber; guide rings for jumpers; beveled washers; perfect sealing nozzle, etc. add greatly to the installation and service convenience of the Reliable "RU" Terminal, as well as providing an assurance of service life beyond actual field requirements. Ask for complete information on sizes and prices.



"Reliable" identifies the quality

no moving parts—and constant within ±1%!



Model
1200 B
24 Amps.
50 Volts

flotrol automatic battery charger

Since operation of the FLOTROL does not depend on tubes, relays, motors or other "expendable" equipment, its dependability is outstanding. In performance record tests, amazing accuracy of voltage regulation has been recorded even when the supply voltage ranged from 105 to 125 volts, and the load varied from less than 10% to over 100% of rated value.

Complete overload protection is automatic with FLOTROL. Even if connected to a discharged battery, component parts remain undamaged.

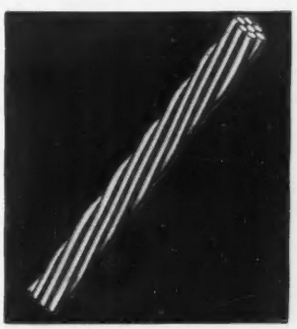
WRITE for Bulletin 160—a complete catalog of FLOTROL Models for single-phase operation.

crapo

guy and messenger galvanized strand

The superior tensile properties inherent in steel are used to full advantage in *Crapo* Galvanized Strand. The tightly adherent zinc coating applied by the *Crapo* Galvanizing Process provides lasting protection against corrosion, and prolongs the life of the strand. Controlled ductility makes *Crapo* Strand easy to work and to serve. Low first cost and low yearly cost result in important economies for operating companies.

The all-round dependability of *Crapo* Galvanized Steel Strand is being demonstrated constantly by its outstanding performance in service. There is a size and grade for all practical needs.



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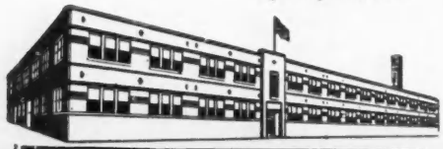

RUNZEL
Cord and Wire Co.
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CHICAGO 41, ILL.

wire of a multigrounded supply system is involved, the requirement for separation is the same as for supply voltages of 0 to 750, when the voltage of the multigrounded system is not over 15,000. If these requirements cannot be met, an increase in the separation is the same as for supply phone line attachments on the poles is required.

To Be Continued

Nebraska Assoc. Holds Accounting School

The Nebraska Telephone Association has announced completion of a 3½-day accounting training school for telephone accounting personnel.

The first school of its kind for telephone people in the United States, training was sponsored by the Nebraska Telephone Association in cooperation with the Nebraska State Railway Commission on the campus of Nebraska State Teachers College, Kearney, Neb., August 10-13.

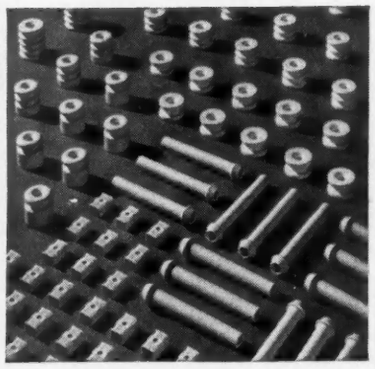
Students from 22 Nebraska telephone companies received instruction in accounting procedures and methods under the Uniform System of Accounts. With primary emphasis upon accounting for the small telephone company, instruction included classroom and blackboard illustrations of sample entries for various ledgers and journals.

In addition, each student was required to complete a practice set of examples from beginning entries through preparation of a balance sheet and income statement. As a result, a sample set of books for one month was prepared by each student under the supervision of course instructors.

Emphasis was also placed upon the proper allocation of operating expenses among the various accounts and the interpretation and analysis of financial statements. All materials used, along with special explanatory material, were retained in a ring binder for future reference by the students.

Approximately one-half of the students drove to and from the school each day while the remainder obtained room and board on the college campus. Distinguished observers included Joseph J. Brown, chairman, Nebraska State Railway Commission, who expressed to the group his view that an accounting school of this type was probably the most significant

PORCELAIN PRODUCTS
TELEPHONE INSULATORS
. . . The RELIABLE Line



Telephone industry acceptance has *proved* Porcelain Products . . . the reliable line of telephone insulators. Porcelain Products assures unvarying uniformity . . . strength . . . precision manufacture and rigid inspection—always dependable. A complete line for every application. Keep your service standards high—with Porcelain Products' telephone insulators. Backed by 60 years experience producing porcelain insulators. Ask you jobber or write us direct.

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FITS BOTH
BIT BRACES
ELECTRIC DRILLS

CUT OFF HERE
2-Way "Hex" Shank fits both Bit Brace and Electric Drill Chucks

IRWIN
"HEX" SHANK
WOOD BITS

Use new Irwin Two-Way "Hex" Shank wood bits in Bit Brace. Remove and use in Electric Drill. "Hex" Shank fits both — perfectly! No wobble, no runoff. Speed up work on the job. Reduce replacement stock and handling by 50%. Sizes 4/16" to 17/16". Call your mill supply distributor, or hardware wholesaler for details and prices. Irwin — Wilmington, Ohio.

IRWIN HEX SHANK WOOD BITS

undertaking for telephone men and women in Nebraska in a decade.

Students who successfully completed the course and received graduation certificates were: Wm. B. S. Hill, Keystone; Mr. and Mrs. Albert G. Lukow, Blue Hill; Herman Weissert, Eustis; Pat J. Carey, Petersburg; John C. Haines, Naponee; Mr. and Mrs. Purl B. Mock, Springview; Mrs. John Koller, Arapahoe; Mrs. Evelyn Pearson, Campbell; Mrs. Bernice Johnson, Herman; Gerald Streff, Roseland; Mr. and Mrs. W. S. Wiles, Clearwater; George Porterfield, Heartwell; Olive Silvernail, Aurora; Bertha Monnich, Hooper; Mrs. Esther Schroeder, Miller; Doris Strickler, Bertrand; Mrs. I. M. Weeks, Kenesaw; Mrs. R. E. Potter, Wilcox; Mrs. Kenneth Werner, Chambers; Willard Raile, Benkelman; and Mrs. G. Ables, Amherst.

Personnel Changes Made By Gary Group

ANNOUNCEMENT has been made that effective August 1, W. M. Driggs, vice-president and general manager of the Texas Telephone Co., resigned from that position to accept a position on the staff of Mr. O. R. Roach, consulting engineer, Chicago, Ill.

Mr. Driggs has been with the Gary Group of operating telephone companies for a period of almost 10 years. Prior to accepting his position with the Texas Telephone Co., in late 1952 he was general plant superintendent for the Illinois Telephone Co., Bloomington. Before joining the Gary Group, Mr. Driggs was with the Illinois Bell Telephone Co. on various work assignments to and including senior engineer.

W. M. DRIGGS has joined staff of O. R. Roach, Consulting Engineer.

Mr. Driggs has served as chairman of the U. S. I. T. A. Plant Committee as a member of the Radio Service Committee of the same body and as a member of the Plant Committee of the Illinois Telephone Association.

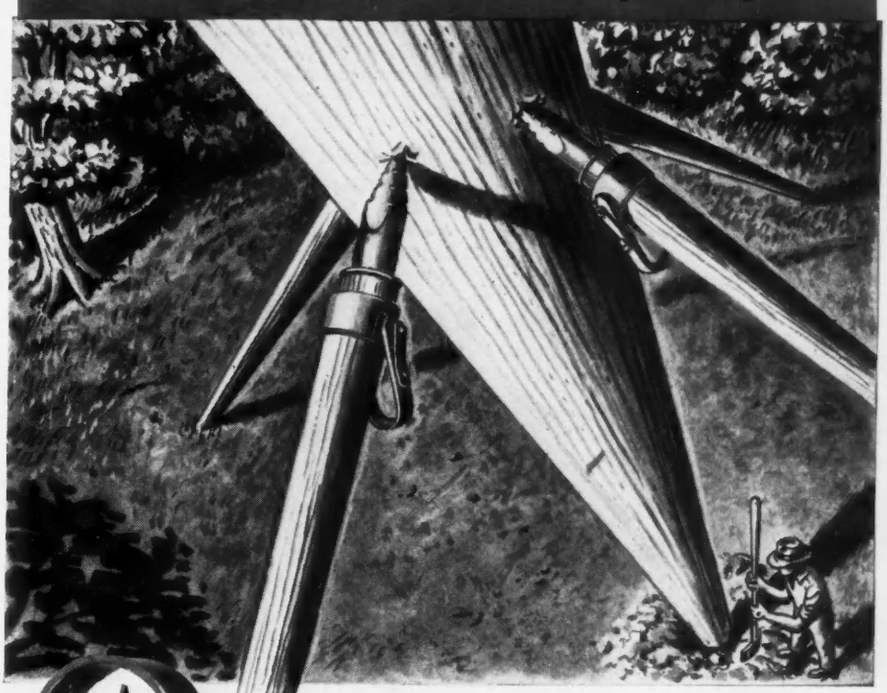
R. S. Griffin, vice-president & general manager of the Iowa Telephone & Telegraph Co. and Iowa Continental Telephone Co., has resigned that position to accept the position of vice-president and general manager of Texas Telephone Co. with headquarters at Sherman, Texas. This change was effective August 26.

Mr. Griffin has been with the Gary Group of operating telephone companies over a period aggregating approximately 20 years. Prior to accepting employment with the Iowa Companies in late 1948, Mr. Griffin had served in a variety of capacities, mostly in the plant end of the business, with the South Carolina Continental Telephone Co., and the Georgia Continental Telephone Co.

Also, for a period of several years,

Please Turn To Page 94

SPEARHEAD *your Safety Program*



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DICKE PIKE POLES

When your men use Dicke Pike Poles, you know they are safe as possible on the pole-line construction job—and *they* know it too. Those *serrated* points simply will not slip. The handle is carefully selected to provide maximum strength endurance. And for *extra* protection—for the point, as well as against injury—be sure to specify "with point guard" on your order for Dicke Pike Poles.

When ordering pike poles of *any* length—heavy duty or light—be sure the odds are *with* your men. Insist on DICKE PIKE POLES.

Manufactured for

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Distributors in U. S. and Possessions: AUTOMATIC ELECTRIC SALES CORPORATION
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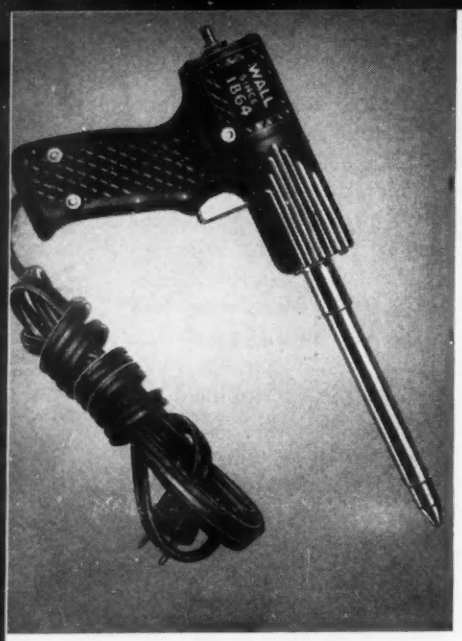

lew and Different! — TRIG-R-HEAT Sollering Gun heats instantly on AC or DC—equires no transformer. Gun has built-in ight and a 6″ reach—weighs only 12 oz. Equipped with ¼″ Iron Clad Tip, has watage range of 400-150. P. WALL MFG. CO.

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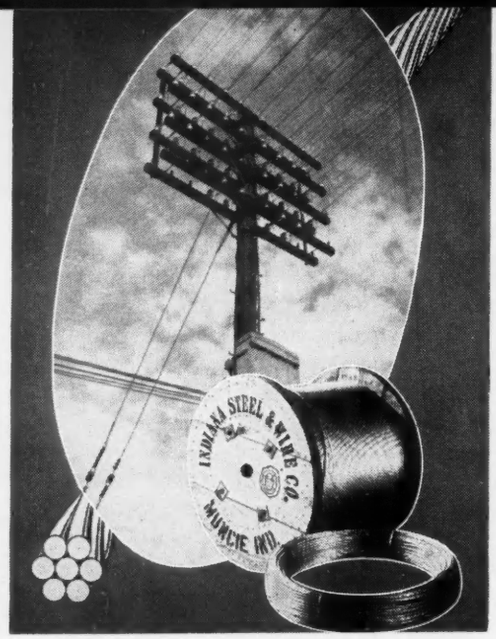

The Time-Tested Steel Strand. A ductile, adherent zinc coating applied by the famous Crapo Galvanizing Process, provides lasting protection against corrosion in INDIANA STEEL & WIRE CO. Crapo Steel Strand. Minimum maintenance expense.

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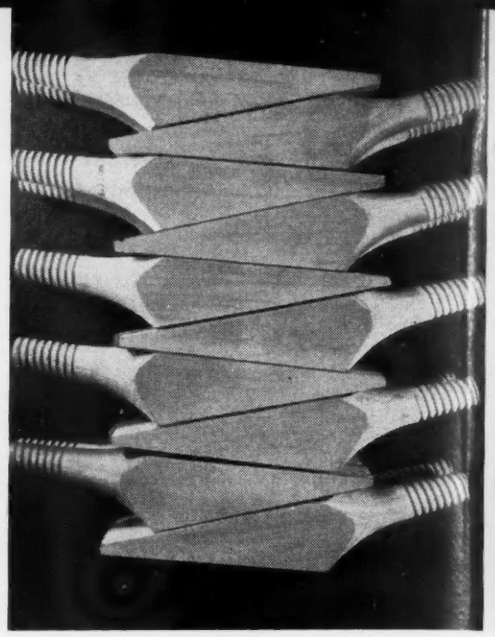
Simple, Natural Operation of Peatrophone automatic telephone answering instrument is similar to a phonograph. Subscribers learn operation easily in one demonstration. No complicated instructions for wiping-off or re-winding as on magnetic machines.



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vailable withl lead-calcium grids (PlastiCal) or projected life of 25 years in full-float ervice—or with high-tensile special alloy rids (PlastiCell) for conventional life ex- ectancy of 14 years. Made by C&D BAT- TERIES, INC.

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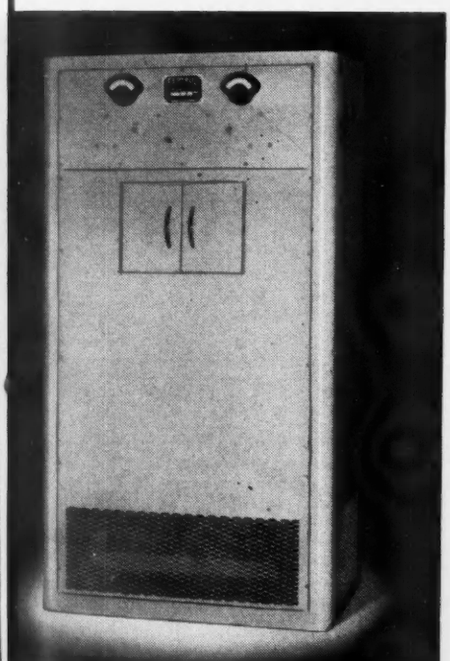
utomatic Constant Voltage Battery Charger! y adding the proper 3-phase FLOTROL to our exchange you can maintain full-float- g operation, cut down running time on our rotary equipment, and save on your ower bill. LORAIN PRODUCTS CORP.



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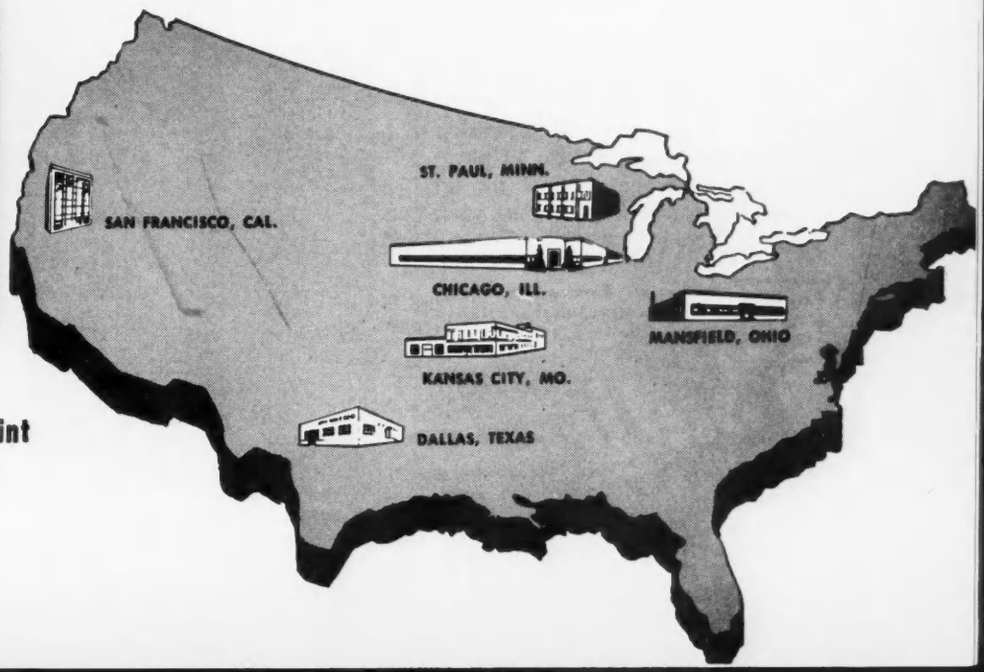

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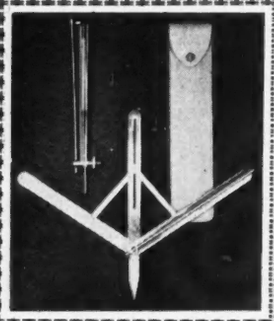
Tools From Suttle for Doing Jobs Easier . . .



For example, here are two outstanding tools for pole line work that will pay for themselves many times over, both in labor savings and better construction.

Van Webb Hydraulic Jack

In repair work it's ideal for straightening poles — just insert a pike pole in the special cup and apply tons of pressure. For pole pulling you get 15,000 pounds without the pulley, or 7,500 pounds with pulley. Yanks any pole out with a minimum of effort. Yet it weighs only 55 pounds.

Dillon Bisector

The patented device that quickly shows you exactly where to place an anchor to get correct guying for any corner, or angle, pole. Keep it in your vest pocket.

See Your SUTTLE Catalog

Serving Independent Telephone Men Since 1910

Suttle EQUIPMENT CO.

LAWRENCEVILLE ILLINOIS

he served in the telephone industry outside of Gary Group employment and during such period was general manager of the United Telephone Co., Dothan, Ala.

Joseph L. Van Horn, vice-president and general manager of the Middle States Utilities Co., of Missouri, the Andrew County Mutual Telephone Co. and the Middle State Utilities Co. of Iowa with headquarters at Cameron, Mo., has accepted the position, effective August 25, as vice-president and general manager of the Iowa Telephone & Telegraph Co. and Iowa Continental Telephone Co., with headquarters at Grinnell, Iowa. Upon acceptance of this new position Mr. Van Horn retains the responsibility for operations in the companies now under his management guidance.

Mr. Van Horn has an aggregate of approximately 10 years of service with Gary Group Companies and at one point in his career was formerly associated with the two companies to which he is now being transferred as general superintendent.

Also in Mr. Van Horn's telephone background was a period of some three years of service with the Lincoln (Neb.) Telephone & Telegraph Co., a position which he accepted immediately following his attendance at the University of Nebraska.

Mr. Van Horn's varied background of business experience includes a period in which he served as superintendent of communications in the Des Moines Ordnance Plant of the U. S. Rubber Co. In this position he was responsible for the installation and maintenance of the telephone,

R. S. GRIFFIN, vice president and general manager, Texas Telephone Co., Sherman.

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On all new telephones specify KOILED KORDS and use them on all replacements.

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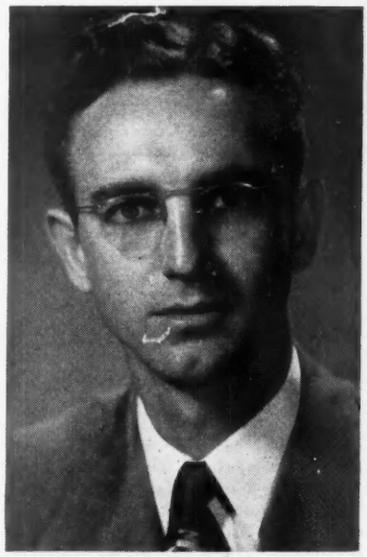
*Trade Mark of Koiled Kords, Inc.

J. L. VAN HORN has been named vice president and general manager of the Iowa Tel. & Tel. Co. and the Iowa Continental Tel. Co.

radio and time recording systems in this large ordnance installation.

W. C. Murphy, district manager of the Iowa Telephone & Telegraph Co., Grinnell, has been named general manager of the Middle States Utili-



W. C. MURPHY has been named general manager of the Middle States Utilities Co. of Mo. and the Andrew County Mutual Tel. Co., Cameron, Mo.

ties Co., of Missouri and the Andrew County Mutual Telephone Co.

Mr. Murphy has approximately eight years of service with the Gary Group of operating telephone companies. All service has been with the Iowa Tel. & Tel. Co.

Also, within the telephone business, Mr. Murphy was associated for a period of several years with the Western Electric Co., St. Louis, Mo., as an equipment installer and for another period of several years with the United Telephone Co.

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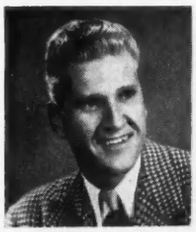
Suppliers' NEWS Briefs

A monthly department featuring condensed reports on activities of the manufacturers and suppliers serving the Independent Telephone Industry.

Telephone industry manufacturers and suppliers are invited to send in news releases for use in this department.

Stromberg-Carlson Advances Raymond J. Wentis

RAYMOND J. WENTIS will assume new duties as telephone sales representative working out of the Chicago office, according to T. C. Thompson, sales manager of the Stromberg-Carlson Telephone Division, Rochester, N. Y. He will cover the State of Kentucky and parts of Indiana and Tennessee, formerly covered by Charles E. Fogg who has been transferred to the Telephone Engineering Department in the Rochester office. Mr. Fogg has been advised to discontinue traveling for the present time due to a back injury received during an automobile accident.



Raymond J. Wentis

Mr. Wentis was born in Rochester and his education in his home town included study at the Rochester Business Institute. He joined Stromberg-Carlson in 1941 as a factory clerk. After serving in the U. S. Air Force during the war years, he returned to Stromberg and in 1952 was transferred to the Telephone Production Control Dept. as an order writer. A year later, he advanced to sales order editor in the Telephone Sales Department, which position he has held until the present time.

New Booklet Describes Brush Disposal Unit

FITCHBURG ENGINEERING CORP., Fitchburg, Mass., has released a new illustrated booklet, "Real Brush Eaters," of interest to telephone companies, line clearance supervisors, and tree service experts. The booklet tells how brush and trimmings can be converted on the job to easy-to dispose-of wood chips, saving man-hours, hauling expense, avoiding burning hazards.

Copies may be obtained by writing to the Fitchburg Engineering Corp., Fitchburg, Mass.

IBM Names Pfeiffer To New Position

INTERNATIONAL Business Machines Corp. has announced the appointment of Ralph A. Pfeiffer as a special representative in the communications department. He previously was an electric accounting machine sales representative in the company's Cleveland office. In his new post Mr. Pfeiffer will assist in planning applications of IBM equipment to meet the accounting requirements of firms in the communications field. Mr. Pfeiffer joined IBM in 1949 in Cleveland and served in that city in various sales capacities until his present promotion. He is a graduate of John Carroll University.

R. A. Pfeiffer

Ray-O-Vac Promotes Four Executives

DON W. TYRRELL, chairman of the board, Ray-O-Vac Co., Madison, Wis., has announced the promotion of four executives to new offices:

E. B. Ott, formerly vice president for finance is now senior vice president of the company.

J. C. Ryan, formerly vice president for operations has been named executive vice president.

Vern G. Zeller, formerly president, Ray-O-Vac International, is now vice president of the International Division of the parent company.

Alf Morgenson has been elected treasurer.

Mr. Tyrrell also announced the re-election of Roy Berigan, vice president for production, J. A. McInay, vice president for sales, and George C. Guild, secretary.

C & D Issues Bulletins On Stationary Batteries

C & D BATTERIES, INC., Conshohocken, Pa. recently released its specification bulletins CP-536 and CP-537 covering its complete line of lead-calcium and lead-antimony batteries for control, switchgear, and auxiliary power applications.

The specifications include data on battery ratings and capacities, details of design and construction, dimensions, weights, and types of containers.

Both bulletins can be obtained by writing the advertising department of C & D Batteries, Inc., Conshohocken, Pa.

New Color-Coded 6-Pair Rural Cable

A NEW COMPLETELY color-coded six pair No. 19 A.W.G. rural distribution cable with polyethylene insulated and polyvinyl chloride jacketed conductors is now available from Whitney Blake Co., New Haven 14, Conn.

According to the manufacturer the new self-supporting cable is easy to install because of its light weight, small size and complete color coding. Less trimming is required in wooded areas. It is available in long lengths, making possible long runs without

Please Turn To Page 100

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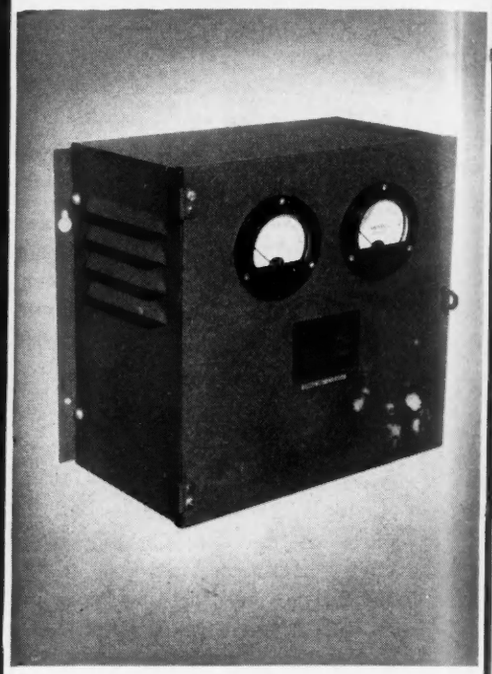

First Choice of the Telephone Industry! The Raytheon RectiChargeR is fully automatic, maintains constant output voltage regardless of variation of load and line voltage. Never overcharged or undercharged, batteries last longer. RAYTHEON MFG. CO.

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Sealed Against Trouble! Communication equipment manufacturers demand Kester Plastic Rosin-Core Solder, because it makes a perfect seal. Prevents high-resistance joints and intermittent open-and-close circuits. KESTER SOLDER COMPANY.

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The Expanding Plates and Spreader Arms of Everstick Anchors insure 100% safety and maximum holding power under excessive strain. Ribbed base plate allows anchor to be locked solidly on rod. Quickly installed. Made by EVERSTICK ANCHOR CO.

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Complete Line of Construction Castings for Underground Electric or Telephone Service. Shown are manhole frame and cover; sump and catch basin frame and grate; and cast iron manhole steps. For service and quality use NEENAH FOUNDRY CO. products.

Cut Maintenance Caused by protection devices by using the Cook Type 7 High Potential Lightning Arrester. Tru Gap Dischargers provide lightning protection and static drain without grounding the line. Made by COOK ELECTRIC COMPANY.

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Drier Than a Desert! The sure way to dry splices in lead covered cables is to sprinkle Drierite Dessicant granules in among the conductors. This W. A. HAMMOND DRIERITE COMPANY product will not harm the sheath, conductors or insulation.

Time Proven—for 60 years Exide Batteries have been serving telephony! The Manchester positive plate with its button type construction provides long life . . use Exide Manchex for all your battery requirements. ELECTRIC STORAGE BATTERY CO.

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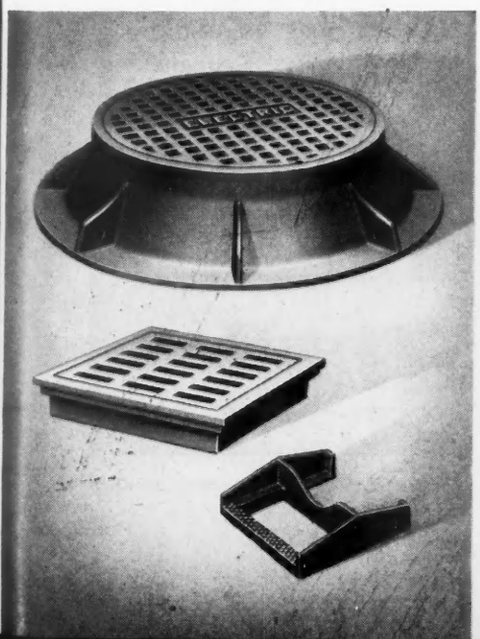
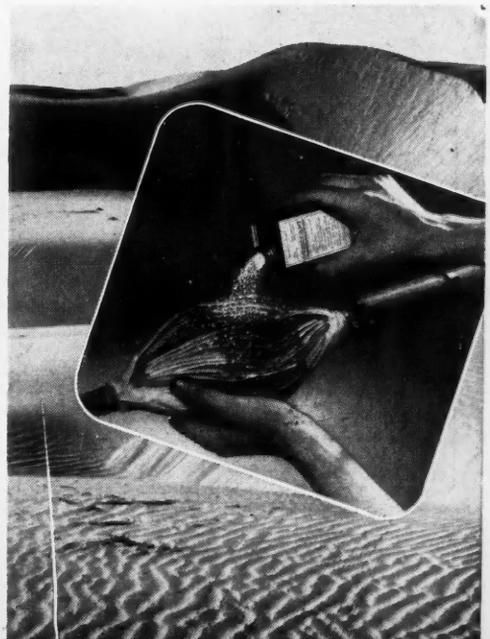
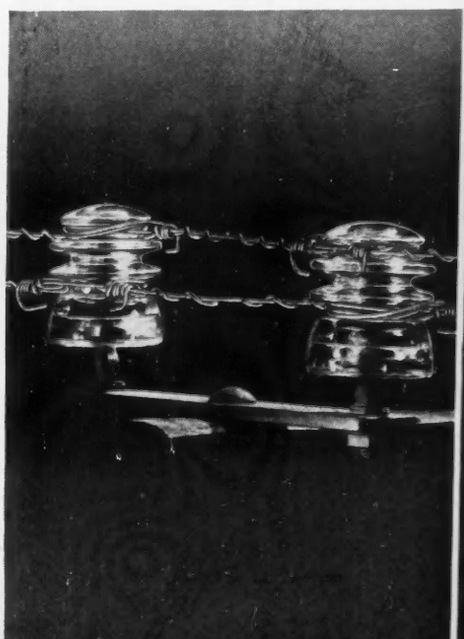
For Point Transposition on Rural Telephone Circuits —Hemingray Insulators No. 56 require no special hardware — transpositions can be made on standard pins. Packed 50 to a carton, each in separate compartment. Product of OWENS-ILLINOIS.







splices. Electrical characteristics of the cable include low-loss transmission, low capacitance and high dielectric strength. The cable is weather resistant and electrically stable. Colors are permanent. The six pairs are cabled around a central member of polyethylene covered, 1800 pounds breaking strength, galvanized steel.

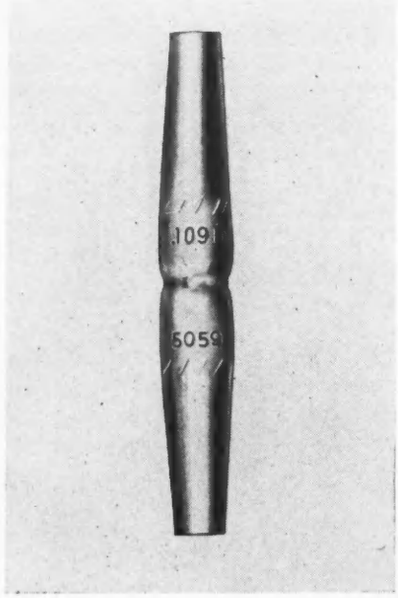
The cable replaces six pairs of open wires for rural telephone distribution. It can be attached to the pole, without the need for using crossarms or, on already crowded poles, either to the pole or to the under side of an existing crossarm. The cable also serves as multiple drop wire to small apartment and office buildings.

Wirelink And Wirevise Announced By Reliable

A NEW AUTOMATIC type splice and a new deadend for use with Rural Distribution Telephone Cable supporting wire and with .109 conductor and all 12 BWG iron wire have been developed by Reliable Electric Co., of Chicago.

They are based on the long proved principle of the Reliable Strandlink and Strandvise and are especially adapted for splicing and deadending the .109 extra high strength steel messenger supporting five and six pair rural distribution cable.

The Wirelink, for splicing, consists of a heat treated aluminum tube, enclosing case hardened steel gripping chucks, which develop more



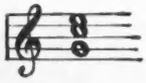
New Wirelink consists of a heat treated aluminum tube, enclosing case hardened steel gripping chucks.

SPEAKING OF CORDS

If you want a cheerful fireplace fire you get this—

If you want to tie a package securely you get this—

and if you want to harmonize you hit this—



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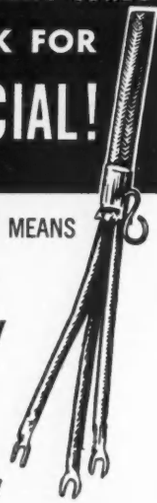

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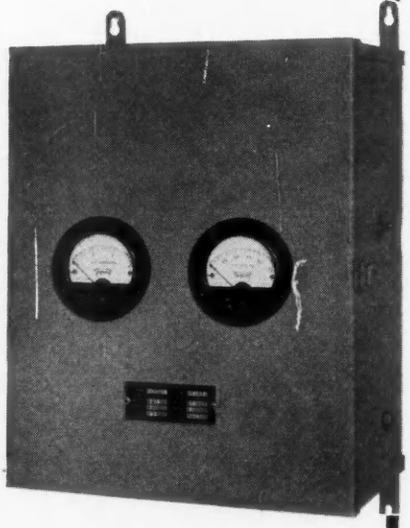

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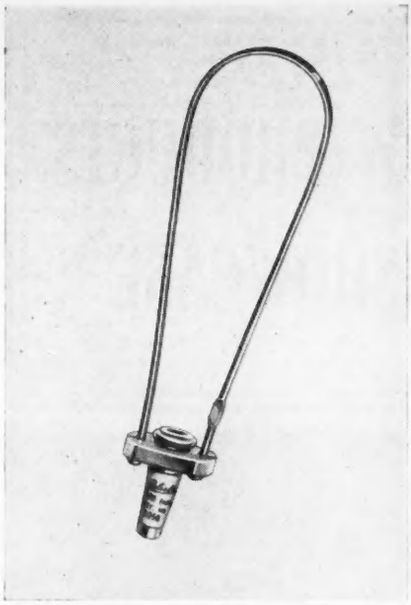

The Wirevise is designed to free one leg of the stainless bail to permit easy assembly around insulator spools and through thimble eyes.

than nominal strength of the steel supporting wire.

It is pressure packed at factory with petroleum jelly to provide lubrication and to permanently prevent corrosion, making it suitable for splicing conductor, as well as splicing supporting wire.

The Wirevise incorporates the same principle with the added feature of a stainless steel bail. Although one-piece, it is designed to free one leg of the stainless bail to permit easy assembly around insulator spools and through thimble eyes.

Samples and complete information, including prices, may be had by writing direct to Mr. George Morse, Reliable Electric Co., 3145 Carroll Ave.,

National Carbon Co. Makes Appointment

NATIONAL CARBON CO., a Division of Union Carbide and Carbon Corp., has announced the appointment of E. L. Dibble to the position of general sales manager, Consumer Products. He will be located at the company's general offices in New York, and will direct the company's sales activities on "Everready" flashlights and batteries, "Prestone" anti-freeze, "Trek" anti-freeze, and the company's line of automotive service products.

E. L. Dibble

Mr. Dibble received his B.S. in Business Administration from Oregon State College in 1931, and his Masters Degree from New York University School of Retailing in 1932. He joined National Carbon Co. as a salesman in Portland, Oregon, in 1934, becoming a territorial salesman in the Kansas City District in 1938. He became assistant division manager in Kansas City in 1944, and division manager in 1946. In 1952 he was moved to manager, Eastern District, the position he has held until his present appointment.

Strand Cable Terminals Announced By Reliable

RELIABLE ELECTRIC CO., Chicago, is now producing a line of cable terminals for strand, pole and wall mounting employing reinforced cast resin binding post terminal blocks with lead sheathed paper insulated and plastic sheathed plastic insulated

Please Turn To Page 104

Eliminates unsightly festoons of drop wire and innumerable drop wire clamps—plus the time it takes to install them. Think what this saves on apartment and commercial buildings! Thermoplastic insulation stands hardest wear, toughest weather—yet strips easily. Strong No. 19 AWG copper conductors make cable self-supporting over normal drop wire spans. Telephone men who use this neat-looking cable like it. So will you. Order today!

Buy Automatic's APPROVED Supplies

Highest Quality
Biggest Line
Fastest Service

Made by General Cable for

AUTOMATIC ELECTRIC

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ADVERTISING, Directories — *General Telephone Directory Co., 604 Pine Ave., Long Beach, Calif., and 1800 Busse Highway, Des Plaines, Ill.*—[ADV. 2]

BELTS — CLIMBERS — COMPLETE LINEMEN'S EQUIPMENT, *W. M. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.*—[ADV. 3]

BELTS — CLIMBERS — PLIERS — SAFETY STRAPS — CONSTRUCTION TOOLS. *Klein & Sons, Mathias. 3200 Belmont Ave., Chicago 18, Ill.*—[ADV. 4]

BOOTHS—Acoustic Telephone — *Sherron Metallic Corp., 1202 Flushing Ave., Brooklyn 6, N. Y.*—[ADV. 5]

BRUSH & WEED KILLERS — *Thompson manufactures many types of brush and weed killers. Write for helpful information on specific problems. Thompson Chemicals Corp., St. Louis 3, Mo.*—[ADV. 6]

CABLE, All Plastic, *Aerial, Duct, Direct Burial, PBX, Switchboard. — The Ansonia Wire & Cable Co., Ansonia, Conn.*—[ADV. 7]

CLIP — Modern Lineman's Needle Clip. Free catalog #AA588 and free samples from: *Mueller Electric Co., 1588AA E. 31st St., Cleveland 14, Ohio.* [ADV. 8]

CORDS, Switchboard (with or without plugs), Instrument (retractable and regular) and Operators — *Commercial Cord & Supply Co., Inc., 26 Main St., Clifton Springs, N. Y.*—[ADV. 9]

CORDS, Switchboard & Telephone — *Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago 41, Ill.*—[ADV. 10]

ELECTRIC HOT WATER HEATERS. *Thermostatically controlled for any hot water heater, Vulcan Electric Co., Danvers 17, Mass.*—[ADV. 11]

FURNACES — For quickly and economically melting lead and paraffin — *Mutual Liquid Gas Equipment Co., Inc., 3600 W. Imperial Highway, Los Angeles, Calif.*—[ADV. 12]

INSULATORS, Porcelain — *Porcelain Products Inc., Box 300, Findlay, Ohio.*—[ADV. 13]

LIGHTWEIGHT PULLERS — *Coffing Hoist Company, 800 Walters St., Danville 5, Ill.*—[ADV. 14]

PIPE PUSHERS — *Giant Manufacturing Co., South 6th St., at 12th Ave., Council Bluffs, Iowa.*—[ADV. 15]

POLE HOLE DIGGERS — *For derrick mounted trucks. Tele-E-Lect Products, Inc., 9613 Minnetonka Blvd., Minneapolis 16, Minn.*—[ADV. 16]

POLES, Southern Yellow Pine — *Colfax Lumber & Creosoting Co., Inc., P. O. Box 23, Pineville, La.*—[ADV. 17]

POLES, Southern Yellow Pine — *Taylor Colquitt Company, 290 E. Main St., Spartanburgh, S. C.*— [ADV. 18]

POLES, Southern Yellow Pine — *Texas Creosoting Co., Orange, Texas.*—[ADV. 19]

PROTECTIVE EQUIPMENT — *Reliable Electric Company, 3145 Carroll Avenue, Chicago 12, Ill.*—[ADV. 20]

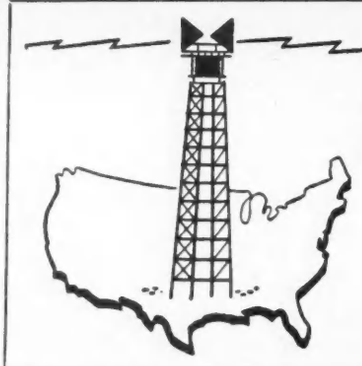
REBUILT TELEPHONE & SWITCHBOARDS — *Telephone Repair & Supply Company, 1760 Lunt Avenue, Chicago 2, Ill.*—[ADV. 21]

TRUCK BODIES — *Highway Trailer Co., Edgerton, Wisc.*—[ADV. 22]

WIRE, Insulated — DATED DROP WIRE — Neoprone or Weatherproof — *Alphaduct Wire & Cable Co., Milltown, N. J.*—[ADV. 23]

WIRE, Insulated Drop and Bronze or Copperweld — *Acorn Insulated Wire Co., Inc., 36 Freeman St., Pawtucket, R. I.*—[ADV. 24]

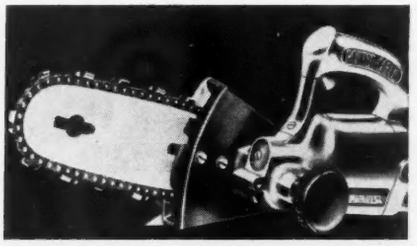
WIRE, Telephone, *for all inside and outside uses — Whitney Blake Co., New Haven, Conn.*—[ADV. 25]



NEW PRODUCTS' SHOWCASE

LADDER SAFETY DEVICE: — The Tower Ladder Safety Device manufactured by Safety Tower Ladder Co., 1024 Burbank Blvd., Burbank, Calif., is engineered to save lives and prevent injury to men who work on high ladders and structures. According to the manufacturer, the device positively prevents falls. Its locking and holding action is instantaneous.

Inexpensive, easy to install and use, it simply clamps on to the ladder or framework. Requires no cutting, welding, drilling or altering the tower or ladder. Strong, convenient, positive in action, it insures outstanding safety New Product 656.



COMPACT CHAIN SAW: — A powerful electric chain saw, just introduced by Porter-Cable Machine Co., Syracuse, N. Y., as the Model 128 Limb Saw, has several unique advantages. It is much handier — weighs only 7½ pounds, measures 16" overall, and can be held by one hand in any position with little effort. It costs only one-third as much as ordinary gasoline-driven chain saws, and does away with their noise, vibration, fumes and fuel tank.

This versatile new saw has been designed to fill a special need on the part of tree surgeons, contractors, parks, institutions, utility crews, road gangs, railroads and mines.

The Porter-Cable 128 is easy to handle aloft where it quickly prunes branches and lops off boughs up to 7" in diameter — where large chain saws prove too awkward, and hand sawing is slow drudgery. It is ideal for topping or de-limbing, and bucks timber into firewood as fast as you can stack it. It will fell a large 14" diameter-tree in a few minutes simply by pivoting the saw around the bole. It makes quick work of cutting large beams to size, clearing woodlots, cutting cord and pulpwood, clearing land of trees, saplings and underbrush.

A universal AC-DC 115 volt motor gives

SEND IN THIS COUPON FOR MORE INFORMATION

Telephone Engineer Publishing Corp.
7720 N. Sheridan Road
Chicago 26, Illinois

Please forward complete information on the following products and services described in the September, 1954 issue of TELEPHONE ENGINEER & MANAGEMENT (Check Information desired.)

NP 656 NP 657 NP 658

SERVICES AND SUPPLIES

ADV. 1	ADV. 2	ADV. 3	ADV. 4	ADV. 5
ADV. 6	ADV. 7	ADV. 8	ADV. 9	ADV. 10
ADV. 11	ADV. 12	ADV. 13	ADV. 14	ADV. 15
ADV. 16	ADV. 17	ADV. 18	ADV. 19	ADV. 20
ADV. 21	ADV. 22	ADV. 23	ADV. 24	ADV. 25

Name _____ Title _____

Company _____

Street Address _____

Town _____ Zone _____ State _____

the junior chain saw amazing power for its size. It is ruggedly built for all-day operation and has a hardened steel cutter bar with an Oregon chipper chain that runs at 1100 feet per minute. Hardened steel and bronze worm gears, and precision ball bearings assure long life. The housing is of aluminum alloy with a loop handle and trigger finger switch. It is designed for perfect balance, with the cutter bar at an angle to keep chain out of dirt when saw is resting on ground. Log-gripping teeth hold saw against wood while chain actually pulls its way through.

Available equipment includes a round file for sharpening teeth, oil can, 50-foot extension cord, cord lock, grease, wrench, and portable electric generator for use where current is not available. For complete details on Limb Saw, and catalog of 40 other portable electric tools, Check New Product 657.

EXTENSIBLE PERSONNEL TOWERS: — A new series of Hi-Ranger extensible personnel towers has been placed in production by Mobile Aerial Towers, Inc., Fort Wayne, Ind.

Series 3 and 4 Hi-Rangers are designed to place a worker at maximum platform heights of 32 feet and 40 feet respectively. Maximum working heights are 5 or 6 feet higher. The units are designed for industrial inspection and maintenance, general tree culture, and similar applications requiring such working heights. Special heights and weight capacities are available within each series.

The manufacturer states a principle advantage of the new units is their great flexibility in mounting. Series 3 can be mounted on any ¾ ton (or larger) pickup type truck, utility truck or industrial truck such as the fork lift variety. The Series 4 can be similarly mounted beginning with 1½ ton truck sizes. Regardless of the vehicle required, no major alterations need be made before the Series 3 or 4 may be installed. In most cases the vehicle, with mounted Hi-Ranger, may be driven to and from jobs at normal traffic speeds.

Ease of operation and low cost are also cited as advantages. All Hi-Ranger series feature a single-handed "3-D" control, which facilitates safe movement of the operator's platform in any one of, or all three dimensions simultaneously.

Booms of the new series are constructed of seamless steel tubing, with all power furnished by an hydraulic system powered by the vehicle's engine. Enclosed hydraulic cylinders, which eliminate the need for exposed chains and sprockets, supply moving force for the booms.—For more data, Check New Product 658.

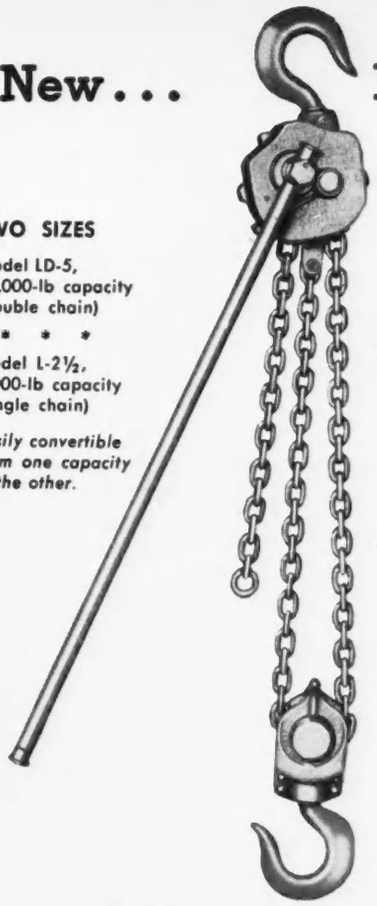
New . . . Different . . . Better

COFFING

Super Power

COIL CHAIN

RATCHET LEVER HOIST



TWO SIZES

Model LD-5, 10,000-lb capacity (double chain)

* * *

Model L-2½, 5,000-lb capacity (single chain)

Easily convertible from one capacity to the other.

For over two years the entire production of Coffing's new Super Power Ratchet Lever Hoist has gone into military service. Now it is available to bring new standards of ratchet hoist performance to civilian users. These are just a few of the advantages this new hoist offers:

SIMPLE in design

Parts are simple, rugged and few in number to assure continued top performance. May be disassembled in the field for fast, efficient servicing.

The only 5-ton hoist of this type using but two chains, contributing to faster operation and lighter weight.

CONVENIENT to use

Handle adjustable for close-quarter applications — also may be operated from opposite side of hoist.

The 5-ton model weighs but 58 lb — lightest weight ratchet hoist in this capacity on the market.

Only 70 lb of handle pull needed to lift 10,000 lb with patented compound lever principle.

You get coil chain flexibility plus free chaining for quick adjustment.

TOUGH for safety and dependability

Ratchets and pawls are specially hardened alloy steel — *every* load-holding ratchet is tested at 30,000 lb.

Housing is certified malleable iron to protect hoist from rust and damage.

Handle is designed to bend before hoist is overloaded beyond safe limits.

For full details, write for Bulletin U9L.

IN PUNISHING "DROP TEST," the Super Power had to withstand the shock of a 10,000-lb load dropped 4 in.— *an impact load of over* 40,000 *lb*. After several hundred such tests of Super Powers, there has never been a hoist failure!

COFFING HOIST COMPANY • DANVILLE, ILLINOIS

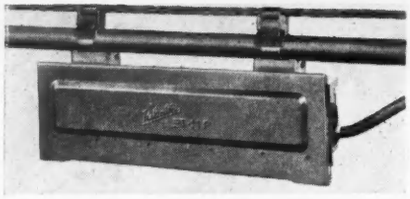
Originators of the Ratchet Lever Hoist

QUIK-LIFT ELECTRIC HOISTS • HOIST-ALLS • MIGHTY-MIDGET PULLERS • SPUR-GEAR HOISTS
DIFFERENTIAL CHAIN HOISTS • LOAD BINDERS • I-BEAM TROLLEYS

cable stubs, suitable for use in cable systems maintained under gas pressure.

The 11-pair and 16-pair terminals are designed primarily for attaching to strand supported cable, affording plant flexibility and minimum chance of damage. Where it is impractical to mount them on the strand, they can be placed in a vertical or horizontal position on poles or walls by using a detachable mounting bracket.

A 26-pair terminal is designed for mounting vertically on poles or walls.



New 11-pair and 16-pair terminals are designed primarily for attaching to strand-supported cable.

Detachable mounting bracket is furnished standard with all 26-pair terminals.

The cast aluminum alloy housings of the 11 and 16-pair terminals are equipped with stub cable entrance holes at opposite ends to facilitate the reversal of stubs where desired. The entrance hole occupied by the stub is sealed with a ring grommet and the unoccupied entrance hole by a solid grommet.

The opening in both ends of the unprotected 11 and 16-pair terminal housing affords a practical means of connecting a plastic and lead cable together where direct splicing is not desired.

The cable sheath and the terminal housing are bonded through the binding post block so that the sheath and housing are at the same potential. The cable shield and the terminal housing are bonded together where plastic stubs are furnished.

The binding post blocks with cable stub can be furnished separately for use in inside terminal boxes. A protected binding post block, ground strip and No. 504 protector units can be furnished for inside building installation where fuseless station protection is desired.

The overall dimension of the ST-11 housing is 5″ x 13½″ x 2¾″ and the ST-16 housing is 5″ x 18¾″ x 2¾″.

Reliable Electric Co. has prepared a handbook size specification, complete with illustrations, covering suggested practices and procedure for the use of these cable terminals. Speficifactions are available on request. For your copy, write Reliable Electric Co., 3147 Carroll Ave., Chicago 12, Ill.

Stromberg-Carlson to Handle "Gai-Phone" Sales

THE STROMBERG-CARLSON CO., Rochester, N. Y., has been appointed the national sales agent for the "Gai-Phone," new electronic telephone designed for noise-free communication in extremely noisy areas. The "Gai-Phone" is the product of Gai-Tronics Corp., Reading, Pa.

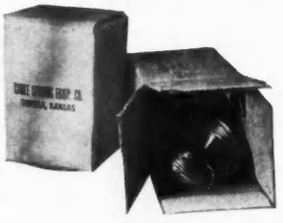
Announcement of the appointment was made by T. C. Thompson, sales manager of the Telephone Division of the Stromberg-Carlson Co.

The "Gai-Phone" enables the user to carry on a clear telephone conversation, even in an extremely noisy location, without a noise-proof booth or other enclosure.

This is achieved by a special dynamic transmitter, which combines

Here's the Neale Model K Pull Type Spinner—engineered for versatility. It's doing a great job on electric power lines . . . and telephone lines, too! Model K has a maximum capacity of three 2″ O.D. cables, and will spin single cable as small as ⅝″ O.D. This spinner may be used with either one or two coils of spinning wire, so you may have either a 13″ spiral or wire 6½″ apart. Model K is furnished with two LC5 Lashing Wire Clamps, tow rope, cable placing dolly, and chest.

Use Neale Wire For Best Results



Contact your jobber

CABLE SPINNING Equipment Company PHONE 2-7234

3100 TOPEKA AVE. TOPEKA, KANSAS

GAI-PHONE housed in Stromberg-Carlson "1500" desk-type instrument.

high quality voice transmission with a high order of discrimination against background noise. The "Gai-Phone" provides control over both incoming (receiver), and outgoing (transmitter) volume, as well as adjustable suppression of "side-tone." Concealed controls on the side of the instrument can be regulated by the installer for the most effective operation in each specific location.

Since the maximum output of the "Gai-Phone" is no greater than that of the conventional telephone, it can be used wherever such a telephone would be used, and can be mixed with conventional telephones in the same system. Operation is exactly the same as a standard telephone. Each "Gai-Phone" requires a 110-volt, 60-cycle electric power connection.

The "Gai-Phone" employs a standard Stromberg-Carlson 1500 instrument, equipped with a special transmitter, electronic amplifiers, side-tone suppression and other auxiliary equipment. It is available for either desk or wall mounting.

Under the sales agreement "Gai-Phone" sales will be handled by Stromberg-Carlson's Telephone Division.

Reilly Opens New Office in Houston

ANNOUNCEMENT has just been made of a new Houston sales office of the Reilly Tar & Chemical Corp. by J. H. Barnett, Jr., general sales manager of the company. Located in the Green Building — Suite 11, 2009 Fannin Street, Houston 2, Texas, the office will be supervised by Donald Becker.

Reilly Tar & Chemical Corporation's new office, now one of three

Please Turn To Page 108

NOW!
AMERICA'S QUALITY POLES
AVAILABLE FOR
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P&H
NORTHERN WHITE CEDAR
PENTA POLES
P & H Northern White Cedar Poles are completely immune against termites and decay. Once treated from top to butt they are protected for life. Once installed they are ready for many years of trouble-free pole-line service. Dependability that helps bring maintenance costs down —yearly profits up!
WATCH FOR THIS BRAND!
'54
P&H
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Get the complete story TODAY! Write for FREE Pamphlet entitled "Full-Length Treated Northern White Cedar PENTA POLES"

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MINNEAPOLIS 3, MINNESOTA
50 CHURCH STREET • NEW YORK, NEW YORK

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HAND GAUGED

Armstrong's Glass Insulators are hand gauged to assure accurate thread contours and pinhole diameters. They fit snugly . . . won't rock or wobble on the pins. For details write Armstrong Cork Company, Glass and Closure Div., 295 Fifth Ave., New York 16, N. Y.

ARMSTRONG'S GLASS INSULATORS
for communications . . . for power

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POSITIONS
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THE CLEARING HOUSE

FOR SALE
OPPORTUNITY
EQUIPMENT

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POSITION WANTED: — Telephone Construction Supervisor; experienced in all branches of telephone industry. Write Box No. 8910, Telephone Engineer Publishing Corp., 7720 Sheridan Rd., Chicago, Ill.

HELP WANTED:—Manager's Assistant for growing telephone company in New Jersey. Should have some experience with general problems. Technical training not necessary. Give complete background and expected salary. Write Box No. 8914, Telephone Engineer Publishing Corp., 7720 Sheridan Rd., Chicago, Ill.

TELEPHONE ACCOUNTANT wanted to take full charge of accounting of Class A telephone company in Florida. Here is an opportunity to grow with a new company with a big future ahead of it. Prefer young man with five to ten years telephone accounting experience. Write to Otto Wettstein, III, President, North Florida Telephone Company, Live.Oak, Florida

HELP WANTED:—Position open for man for transmission testing with some knowledge of electronics and carrier work. Write Box 8906, Telephone Engineer Publishing Corp., 7720 Sheridan Rd., Chicago, Ill.

HELP WANTED: — Young man — Assistant to Wire Chief, shoot trouble — Install with some knowledge of dial and common battery central office equipment. Give age, experience and pay expected, reference. Write Henry Thompson, Mgr., Midwest Telephone Co., Inc., Petersburg, Indiana.

ENGINEERS WANTED

An Independent Telephone Company in the Southwest wishes to supplement existing engineering organization in following specific jobs.

- **Outside Plant — Must have 5 or more years experience and capable of reviewing work orders, preparing engineering practice and construction specifications, establishing material standards and instructing field engineering forces.**
- **Plant Extension and Programming — Should have fairly well-rounded telephone experience and capable of preparing schedules for execution of various projects, prepare budgets and do general planning work.**
- **Transmission and Protection — Must be experienced in protection practices and can supervise foreign wire relations.**
- **General — Must have experience in inventory, cost analysis, depreciation and valuation work.**

Send complete biographical resume, indicating experience and education to

Box 8908, Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago 26, Illinois

HELP WANTED:—Field Engineers for manufacturer of supplies for Independent telephone industry. Need not have engineering degree, but must be thoroughly familiar with outside plant practices and problems. Will work as technical advisers in support of established distributors. Salary, expenses and opportunity for advancement. Write Box No. 8912, Telephone Engineer Publishing Corp., 7720 Sheridan Rd., Chicago, Ill.

HELP WANTED—Progressive rapidly growing Class B Company in Southeastern Wisconsin needs, because of retirement, experienced Cable Splicer and also an experienced Combination Man. Knowledge of dial is desirable. Permanent position, good working conditions, complete insurance program. Advancement opportunity. As Company grows, so can you. Furnish age, experience, etc. Write Box 8911, Telephone Engineer Publishing Corp., 7720 Sheridan Rd., Chicago, Ill.

HELP WANTED:—Two magneto switchboard operators. Write International Telephone Company, Portal, North Dakota.

A WELL ESTABLISHED COMPANY AND A LEADER IN ITS FIELD HAS POSITIONS OPEN — IN ENGINEERING FOR THE FOLLOWING:

A. Engineers experienced in the design of modern machine switching circuits. Should have ability to think in terms of relay circuitry and do independent design work. A good knowledge of problems involving reliability and common practice in modern telephone systems is essential.

B. Engineers with experience in the design and application of telephone and/or industrial relays. A good working knowledge of materials from both the magnetic and mechanical standpoints is required. Design and application work will stress reliability and long life of components.

Reply in confidence, fully stating details of personal and professional history as well as education. Expense paid interviews will be arranged for those applicants demonstrating suitable qualifications in first letter. Salaries will be liberal and as justified by qualifications. Location: Middlewest. Box #8901, Telephone Engineer Publishing Corp., 7720 Sheridan Rd., Chicago, Ill.

DEVELOPMENT & FIELD SYSTEMS ENGINEERS

- ***EQUIPMENT***
- ***CENTRAL OFFICE***
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- ***TERMINAL***
- ***TELETYPE***
- ***POWER***

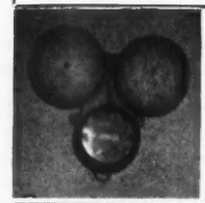
With a progressive, expanding, well established corporation. Interviews will be arranged for qualified applicants. Send complete biographical resume, experience and education to

Mr. J. E. Richardson
Personnel Director

MARYLAND ELECTRONIC MFG. CORP.

5009 Calvert Road
College Park 7, Maryland

HELP WANTED: — Mid-Western Consulting Engineering Firm wants telephone engineer familiar with R.E.A. procedure. Write Box 8913, Telephone Engineer Publishing Corp., 7720 Sheridan Rd., Chicago, Ill.



Rebuilt, Refinished Loud ringing bells. 1000 or 2500 Ohm @ $8.00 each. With Condensers @ $9.00 Each.
F.O.B. Chicago, Ill.
INDEPENDENT TELEPHONE REPAIR CO.
2137 W. 21st St.
Chicago 8, Illinois

RECONDITIONED
FEDERAL No. 804A

Magneto Compact set convertible to desk or wall.
Equipped with capsule type transmitter and receiver. Can be used on long rural lines.
PRICE $19.50 EACH
Terms 2%—10 Days Net: 30
BOHNSACK EQUIPMENT CO.
GERMANTOWN, NEW YORK

TELEPHONE ENGINEERS

- **Outside Plant including Transmission Experience**
- **Inside Plant including Carrier, Toll and Power Experience**
- **Traffic**

Challenging positions with high wages, travel allowance and good chance for advancement. Send complete biographical resume of experience and education as well as availability date to:

George W. Sarbacher, Jr.
NATIONAL SCIENTIFIC LABORATORIES, INC.
2010 Massachusetts Ave., N. W.
Washington 6, D. C.
"A Bowser Subsidiary"

WANTED TO BUY:—Old telephones of historic interest by telephone man for personal collection. Sen particulars to W. C. Twomey, 1436 Sunset Hill Drive, West Covina, California.

FOR SALE:—Dual diverter pole motor generator sets manufactured by Electric Products Company mounted on single base complete with automatic control panel. Generators have capacity of 15 amperes each, at 33 volts; motors are 3 horsepower each operating on 220 volts. Excellent condition. Write Box No. 8915, Telephone Engineer Publishing Corp., 7720 Sheridan Rd., Chicago, Ill.

FOR SALE

COMPLETE TELEPHONE EXCHANGE EQUIPMENT, CONSISTING OF — —

5 position Stromberg-Carlson central energy multiple switchboard. Each position has 17 universal cord circuits. Multiple wired and equipped with 1060 lines. Wired and equipped with 11 toll circuits. Equipped for up to eight party full selective harmonic machine ringing with Leich harmonic ringing converter with automatic change to standby; including all necessary power equipment and 24 amp Flotrol Charger

Complete new key shelves installed in 1952 when converted to harmonic selective ringing.

Complete mainframe equipped with Cook No. 3800 type protectors.

2 positions of the equipment were installed new in Nov. 1940, 1 position installed new in 1942, and 2 positions installed new in 1950. Equipment has been properly maintained and in first class condition.

Now in operation, but should be available in October, 1954 account conversion to dial operation.

If interested, contact
PUBLIC UTILITIES COMPANY
Crossett, Arkansas
P.O. Box 369, Phone No. 54

MAGNETO WALL

3 Bar. 1000 Ohm. @ $18.00
4 or 5 Bar. 1600 or 2500. @ $20

Prices F.O.B. Chicago, Ill.

INDEPENDENT TELEPHONE REPAIR CO.
2137 W. 21st St., Chicago 8, Ill.

LIMITED SUPPLY (Used) SUBCYCLE RINGING MACHINES

Input, 115-V-AC-60 Cy. Output, 20 cycles.
Small PBX Type .....@ $30.00
Large Type .....@ $45.00

Prices FOB Chicago, Ill
Independent Telephone Repair Co.
2137 West 21st. St. Chicago 8, Ill.

FOR SALE: — Approximately 100 Hotel type magneto wall handset telephones and 50 table model handsets with bell box for $5.00 each as long as they last. These were replaced with dial telephones only a few months ago. Write North Star Telephone Co., Mountain Lake, Minnesota.

PRICED LOW FOR IMMEDIATE SALES—One Stromberg-Carlson 50 Drop 125 Switchboard equipped with 50 Kick Coils . . . One Raytheon Recti-charger cells 11/12 6 amps. Sub-cycle Model CC-20 . . . 250 Condensors . . . 30 C-161 Repeat Coils . . . 3 11B Kick Coils . . . 4 Stromberg-Carlson #15 Phantom Coils . . . 50 assorted Ringer Boxes with Handset Stands . . . PHONES 50 Leich 86, 50 Leich 901, 25 Leich 600 C. B., 50 Stromberg-Carlson 1200 C.B. Hickory Telephone Co., Hickory Corners, Mich., Phone Oriole 1-9111.

FOR SALE

CARRIER EQUIPMENT

8 — Complete Western Electric "H" Carrier Channels

4 — Western Electric M1 Carrier Channels

2 — Federal Telephone & Radio Corp. 9H1 Carrier Channels

We have the carrier equipment listed above immediately available for shipment. This equipment was installed in our plant and supplied toll grade circuits with ring-down supervision. The equipment was replaced because of our dial conversion program. The equipment is offered on an "as is" basis at exceptionally reasonable prices. Write to **F. H. Marsters, Purchasing Agent, General Telephone Company of Pennsylvania, 20 East Tenth Street, Erie, Pennsylvania.**

FOR SALE: — 100 line North Electric MXC Switchboard, 3 paystation lines, 3 trunks, 13 line PBX group, Leich harmonie pole changer 5 frequency, 2-3 amp Raytheon chargers, 1-B type MDF with protectors and terminal blocks. Available now and ready to operate. Set up in frame building — optional also 11,745 feet — 51-22 DSA cable on reels — brand new. Make offer. If interested contact Mid-Plains Rural Telephone Cooperative, Inc., Tulia, Texas, phone 5-2700.

REBUILT SWITCHBOARDS

2-Position Switchboard - 24 volt, in "Like New" condition - Gives same service and appearance as a new board. Has Universal Cord Circuit, 400 Common Battery & 200 Magneto Line Capacity. Is equipped with 17 Universal Cord Pair on each position, has 200 C. B. & 100 Magneto Lines installed & Line and Cut-off relays on separate relay racks. We will arrange and install equipment in accordance with specifications of buyer.
@ $5,500.00

W.E. 24 volt Common Battery Switchboard with 300 Line 16 Cord Pair capacity. Equipped with 150 Common Battery & 50 Magneto Lines with Line & Cut-off Relays.
@ $1,800.00

Kellogg Magneto Switchboard 160 Line capacity. Equipped with 100 lines.
@ $1,100.00

Prices F.O.B. Chicago, Ill.

TELEPHONE REPAIR & SUPPLY CO.
Rogers Park 4-3817
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FOR MAGNETO SWITCHBOARDS

W. E. #22-C Combined Jacks and Signals on #89-B Mounting (5 per strip) *NEW*
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Federal #804-A Magneto Handsets for Desk or Wall Mounting—*RECONDITIONED*

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TELEPHONE & SUPPLY CO.
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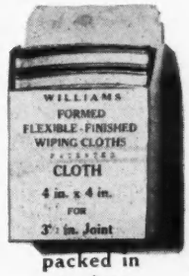
Kingswood 0655



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Cable-Splicers WIPING CLOTHS

Formed-flexible finishing cloths; (Patented); Flat finishing cloths; Catch cloths; Crotch cloths and Up-right joint catch cloths. Made of world-prize HERRINGBONE TICKING or imported English MOLESKIN. Write for literature and prices.

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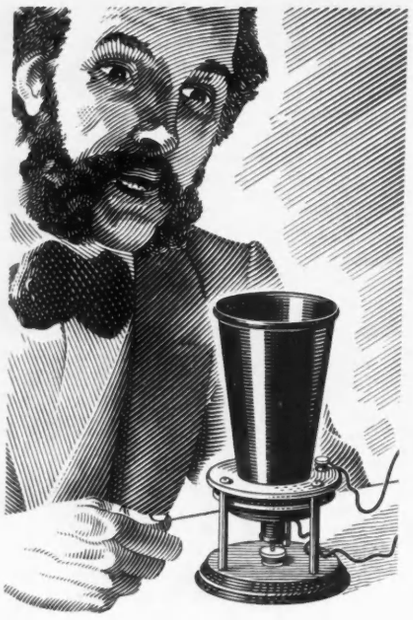


The invention that shaped the world

"**Mr. Watson,** come here, I want you," spoken March 10, 1876 by Alexander Graham Bell . . . were the first words transmitted by telephone. Although these words were transmitted from one room to another . . . it was the beginning of one of the greatest advances in communication history.

The first Hemingray Glass Insulators were made in this same era. Through constant research and development they have kept pace with the insulator requirements of communication systems of the world.

If you need an insulator for a communication job—it's in the Hemingray line. Most jobbers carry complete stocks. Write for free descriptive catalog. Kimble Glass Company, subsidiary of Owens-Illinois

HEMINGRAY INSULATORS

AN (I) PRODUCT

OWENS-ILLINOIS

GENERAL OFFICES · TOLEDO 1, OHIO

Concluded From Page 105

in Texas, is equipped to handle the sale of coal tar enamels, chemicals, creosoting materials, road tars, roofing, waterproofing, and other Reilly products. Further information can be secured from Mr. Becker at Preston 2009.

H. W. Skidmore Appointed Leich District Manager

LESLIE H. WARNER has announced the appointment by Leich Sales Corp. of Hugh W. Skidmore to the position of Eastern District Manager.

Mr. Skidmore was previously an Assistant District Manager. Born and raised in Chicago, he attended the Illinois Institute of Technology

HUGH SKIDMORE, new manager for Leich Sales Corporation's Eastern Division.

and received his degree in chemical engineering from the University of Notre Dame.

The appointment of Mr. Skidmore was occasioned by a revision of Leich Sales Corporation's district organization.

The new district arrangement divides the country into six geographical areas and places the sales and service functions in the hands of District Managers.

The districts are as follows: Southeastern District — Carl W. Schwob, Manager; Central District — Walter G. McDougall, Manager; West Central District — Richard D. Friehe, Manager; Southwestern District — Jack A. White, Manager; Western District — Kenneth J. Johnson, Manager; Eastern District — Hugh W. Skidmore, Manager.

BASHLIN EQUIPPED!

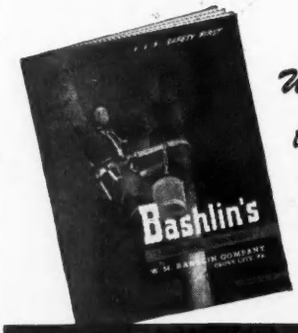
A Full 5 Inches of Body Movement

With Ease and Safety

BASHLIN'S

New Shifting Tool Dee Safety Belt

Next to Safety in the experienced lineman's book, Accessibility of Tools is of first importance in selecting a Safety Belt. This new Bashlin Safety Belt is designed with sliding tool loops . . . keeps tools within easy reach. And the built-in extra safety factor saves the Safety Strap from wear. It's Safe . . . Practical . . . Comfortable . . . and you *know* it's right. It's Bashlin.



Write for this new book

W.M. BASHLIN COMPANY

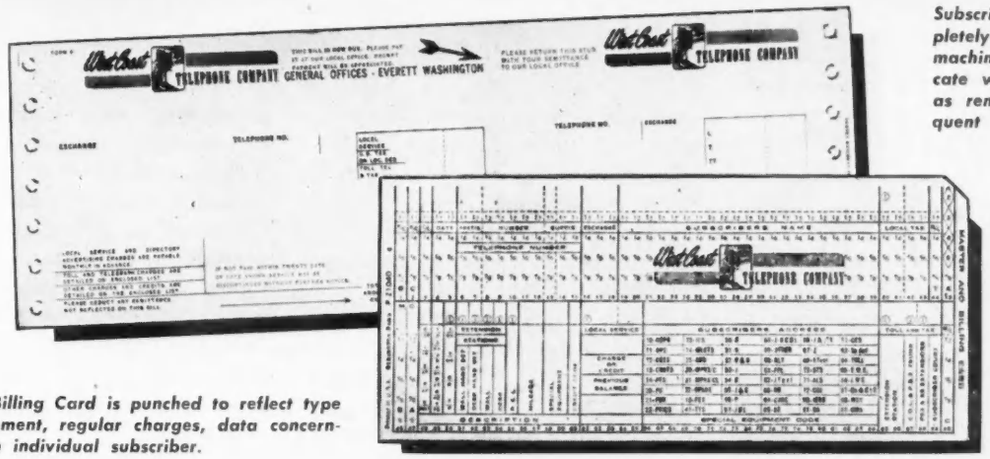
GROVE CITY 1, PA.

STROMBERG-CARLSON®

transmitter

Published by the makers of Famous XY® Equipment

VOL. 3, NO. 6 SEPTEMBER, 1954



Subscriber's bill is completely prepared on machines, has duplicate which can serve as reminder to delinquent subscribers.

Master Billing Card is punched to reflect type of equipment, regular charges, data concerning each individual subscriber.

Machine Methods Streamline Accounting For West Coast Telephone Company

Clicking along at speeds greater than the swiftest human hands, astounding machines have taken over the job of billing West Coast Telephone Company's 99,032 subscribers.

In the general office at Everett, Washington, the tabulating department is now using machines to handle a wide range of accounting problems — payroll, inventory, subscriber billing, statistics and toll studies, to name a few. The latest in modern tabulating machinery cuts the time of these operations to a fraction of their former requirements.

Subscriber billing, for example, is now performed so efficiently that the accuracy and speed of machine tabulating more than makes up for the cost of the equipment.

Early Use of Machines

West Coast pioneered and adopted this method of subscriber billing in 1949. The company had been using tabulating equipment since 1936, when labor and material distribution accounting required a mechanized system. Success in this experiment led to the use of tabulating equipment in many other applications.

When a new subscriber is listed, the tabulating department punches out a Master Billing Card for him. This gives, in punch code, complete data concerning the installation and the subscriber, and his base rate. When the subscriber's billing date approaches, the Master Billing Card is the basic unit from which the bill is prepared. From it a "current" billing card is prepared. This current card is fed into a tabulating machine along with several other punch cards, each bearing special information on:

- address
- directory advertising
- charges or credits for installations or changes
- special charges
- toll charges
- previous balance.

The machine swallows up all these cards, and translates their information into a single easy-to-understand invoice for the subscriber.

Automatic Summary

While the bill is being tabulated, a summary card is automatically cut, and this becomes the accounts re-

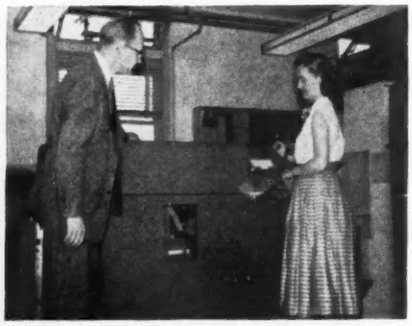
Lloyd Afdem, assistant tabulating machine supervisor, reproduces subscribers' master cards for billing, Joan Bailey (left) is running material used and recovered, while Adelyn Gettys (right) is reproducing accounts receivable cards.

ceivable card. The payment stub from the bill is used to clear the accounts receivable card, and any cards left after the closing date become the "unpaid balance" cards, which are sorted in with next month's cards for re-billing.

The subscriber's bill is in two parts. The original copy consists of the bill and payment stub. The second copy is a reminder statement (carbon of the bill) and the cashier stub (carbon of payment stub). If, after twenty days, the bill has not been paid, the commercial office mails out the reminder statement, detached from the cashier stub.

Variety of Jobs

The exceptional speed and accuracy of machine methods such as these has led A. C. Solem, supervisor of



Mary Muckey and Al Solem, tabulating machine supervisor, are computing labor distribution. The machine punches the amount of each employe's pay into each card.

West Coast's tabulating department to tackle many jobs that would take days if done by hand. For example, during labor negotiations the payroll analysis punch cards can be used to get a quick study of the increase in labor costs under a new pay scale.

Rene Brough, tabulating machine operator, is running subscribers' bills on the machine at the right, while Carolyn Walseth, tabulating machine operator, runs payroll checks at the left.

These West Coast Telephone Company key punch operators are transcribing information from subscribers' toll tickets onto punch cards.

In addition, the company uses tabulating machine methods for taking supplementary toll peg counts.

Cards are punched for each item tallied in the peg count and these cards are pulled for each applicable item on a toll ticket for the peg count study period. These are then summarized by machines giving the ticket count and the total count of traffic work involved. In this way a quick answer for weighted coefficients to be used against other toll peg counts in other months of the year is obtained.

Toll Surveys

West Coast Telephone Company also prepares its annual toll distribution studies by means of which traffic engineers determine the toll circuit quantities for future use. The equipment has also been used on the company's large and complete toll separation study.

With over 1,700 employes located in three states, West Coast Telephone Company must overcome the obstacle of different state taxes and payroll report methods. Using the punch cards, this job is now handled in record time, with accurate computations to fit each state's laws.

Although West Coast was a pioneer in machine tabulating methods in the telephone industry, even today they are pushing back new frontiers. As you read this, they may be installing their eagerly-awaited new electronic brain — a highly specialized machine that takes up where their present machines leave off, and provides more complete computations and analyses. West Coast Telephone Company plans, with the speed and flexibility of this wired wizard, to greatly improve their already streamlined methods of processing records.

Evergreen State Boasts Another XY

It's getting to be a habit — XY Systems in Washington. A recent addition to the swelling total of XY exchanges in this area is Eatonville, Washington, home of the Mashell Telephone Company. Nestling at the foot of towering Mount Rainier, in the midst of natural grandeur unsurpassed, the town has grown quietly but steadily, with some 400 subscribers now served by the new dial system.

Today's company began with N. P. Christensen, who took over the franchise and the 30 telephones in 1912. The company was managed by Mr. Christensen and his sons, Henry and Dan, during the years of growth which culminated in the recent conversion to XY dial.

In March 1953 a corporation was formed with Dan Christensen as President, Arndon Haymes, Vice President and Mrs. Mildred Predmore as Secretary-Treasurer. Financial assistance was given by the Stromberg-Carlson Credit Corporation. Since the death of Dan Christensen in March, 1954, Arne Haymes has been acting manager.

STROMBERG-CARLSON transmitter

Stromberg-Carlson Tape Announcer

by William Pharis, Circuit Development

As more and more telephone exchanges are converted to dial operation and intertoll dialing by both the toll operator and the subscriber comes into general use, the need for some means of playing recorded announcements to calling subscribers, or operators becomes increasingly desirable. The Stromberg-Carlson Tape Announcer is designed especially for use in telephone offices for this purpose. With the Tape Announcer a verbal message, clearly announced as a recording so that the calling party will know it as such, is substituted for the costly method of using an operator's time to handle calls requiring a standard announcement which can be recorded, or using special tones which may be misunderstood especially by calling parties at distant locations.

For Dial Offices

In almost any dial telephone office there is a need for some form of intercept service for changed or discontinued numbers and for unassigned or unequipped terminals. The Tape Announcer provides an ideal means for providing this service in an economical manner, transmitting a message which is easily understood even by a party in a distant location. It is possible, in most cases, to make one recording for intercept which may be used for the life of the tape.

If a dial telephone exchange is equipped for toll ticketing, Tape Announcers will be found useful in providing special announcements to subscribers making use of these facilities. One use would be to provide an announcement after releasing the intertoll switching equipment if a called party in a distant office fails to answer after a specified length of time. Another use for a Tape Announcer in connection with toll ticketing would be to provide special announcements when calling subscribers make errors in dialing. It can be seen that the use of Tape Announcers in connection with toll ticketing will decrease the non-revenue producing holding time on costly intertoll circuits, a distinct saving.

The tape announcer may be used in a telephone office to provide many other special services using a message. One of these is in weather reports. Since weather reports must be changed at regular intervals the use of magnetic tape for recording these messages is ideal, as it permits messages to be erased and recorded without replacing the tape.

An easily inserted cartridge contains the magnetic tape upon which messages may be recorded. This tape is driven by a small 105 to 120 volt 60 cycle AC hysteresis type phonograph motor at a speed of 3¾ inches per second. This speed provides sufficiently high frequency response for telephone use without requiring excessively long tapes. The tapes supplied in the cartridges are normally long enough for a 30-second message. Longer or shorter tapes may be obtained on special orders.

Great Flexibility

Since the tape cartridges may be changed in a matter of seconds without the use of any tools or disturbing any part of the apparatus, the Tape Announcer made by Stromberg-Carlson is ideally suited for applications where messages must be changed frequently as well as for applications requiring no change in the message. In the first instance it is possible to make recordings on one Tape Announcer used as a master recorder and to transfer the tape cartridges to other Tape Announcers used for playback only. In cases where only a few different announcements are used, it is possible to provide several cartridges each having a different message. Messages then may be changed by simply substituting one cartridge for another.

To permit the Tape Announcer to be used in applications where more than one telephone line is connected to the announcer at the same time, its output is terminated in a fixed 3.3 ohm resistor. The addition of as many as 30 telephone lines in parallel to the output has little effect on the output level; and the 3.3 ohm termination makes it impossible for parties on the connection at the same time to talk to each other.

A simple stopping circuit is provided to stop the tape at the end of the recorded message. This consists of a stripe of silver paint across the tape and a set of wipers which complete a circuit when it encounters this stripe to cause the Tape Announcer to come to rest in its stand-by condition. It is possible to provide a gate circuit which is controlled by the stopping circuit to prevent lines from being connected to the Tape Announcer at any time except the beginning of the message.

The electronic circuit for the Tape Announcer consists of a three stage amplifier circuit and an erase or bias oscillator circuit. The first stage of the amplifier is a pre-amplifier stage, the second a voltage amplifier stage and the third a power or output amplifier stage. This three-stage amplifier is used for both recording and play-back and makes use of two miniature type tubes. A third miniature tube is used for the oscillator which is enabled only during recording.

The Tape Announcer may be supplied for direct access from selector banks or connector banks or may be equipped for use with an intermediate control circuit such as an intercept circuit. Control relays on the Tape Announcer circuit plate are designed to operate on exchange battery while the Tape Announcer itself operates on 105 to 120 volt 60 cycle AC. Only the AC is required for recording.

Tape Announcers may be provided for jacked-in mounting or 27½-inch relay rack mounting with connections made to a convenient terminal block. The over-all width of the circuit plate is 4 41/64 inches.

STROMBERG-CARLSON transmitter

They Keep Hustling in Atlanta

In this, the last of the biography series on Stromberg-Carlson branch office Sales Engineers, we meet George Masak and James Hagen of the Atlanta office. Since they work under the tutelage of W. L. ("Moon") Mollands, you'd know they hustle; a glance at a map of XY installations in Florida, Alabama, Georgia, the Carolinas and Virginia is *adequate proof* of their good work.

George Masak

George Masak came to Stromberg-Carlson in 1945, just in time to plunge headlong into the XY Systems program. He was a member of the first XY Training School — and heartily recommends this training program to his present clients.

George brought to Stromberg-Carlson a rich background. Starting with Harrison Technical High School in Chicago, Northwestern University

and Armour Tech, he spent twenty-two years with another manufacturer of telephone equipment. His experience there covered many phases of the operation: production, laboratory, engineering, cost estimating and managerial.

At Stromberg-Carlson George worked with R. O. Hoffman, Chief Sales Engineer, until the growth and importance of the Southeast made it imperative that a resident sales engineer be assigned to Atlanta. This move was made in 1948, and George, in the intervening years, has won the respect of telephone executives in this area for his practical knowledge and his willingness to spend long hours solving a knotty problem. In the process he has even developed a southern accent!

Anne Masak and the two boys, George Merle, 11, and Stevens, 9, enjoy fishing trips and are becoming quite serious about golf on those cherished occasions when all four can get together as a family.

James G. Hagen

With the tremendous upsurge in the Southeast, it was inevitable that the Atlanta office would need a second Sales Engineer. James G. Hagen up to that time had been in Rochester all of the time. He grew up in the city, attending the public schools, and obtained a degree in Electrical Engi-

neering from the University of Rochester. His first job was at Stromberg-Carlson.

Jim had his turn with Uncle Sam: assigned to development of radio direction finding and radar equipment for amphibious forces. Later he served in the Pacific theater as engineer-in-charge of electrical generating and distribution systems at Nagoya, Japan.

In 1946 Jim returned to Stromberg-Carlson in the XY circuit design group. Three years later he was made coordinating engineer for large dial system planning and conversions. In this capacity he helped to engineer some of the largest intertoll installations now operating in Florida.

Jim came to the Atlanta Office in time to assist with the Kingsport, Tenn., XY conversion. While this is his largest job to date, there are sizeable contracts all through the Southeast requiring his attention.

Mrs. Hagen, a former telephone operator whom Jim met and won during the Jefferson City, Mo., XY installation, shares his interests completely.

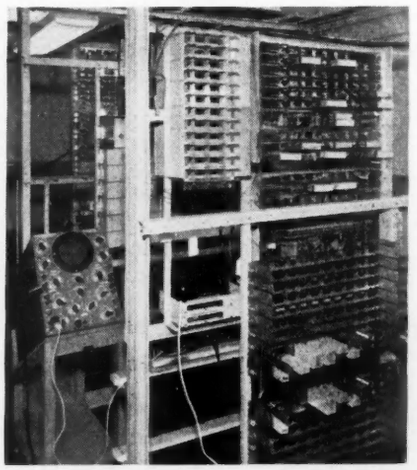
Part 3 of the New Look at Stromberg-Carlson:

The New Telephone Engineering Laboratory

Typical of the expansion and modernization of departments now in process at Stromberg-Carlson is the relocated and enlarged Telephone Engineering Laboratory. The facilities provided are commensurate with the company's position as a recognized leader in supplying equipment to the Independent telephone industry, and, as far as possible, anticipate the expected increase in demand for additional laboratory services.

This modern laboratory was planned with a view toward quickly accommodating the varied demands, with flexible "area" allocations that can be expanded or contracted with a change in emphasis.

A modern, glareless lighting system provides at least 60 foot-candle illumination over the entire area, sufficient without accessory lighting for all but the most exacting detail work. Electric power is distributed by ceiling ducts spaced to allow changes in area layout. Direct current power, ringing, tones and pulses are distributed through a cross-connecting panel utilizing the same components as the Stromberg-Carlson Power Board.



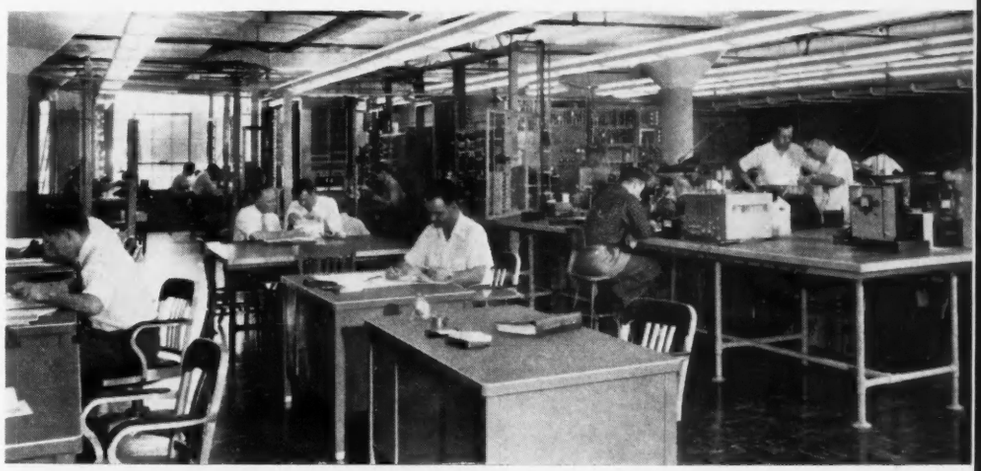
A SECTION OF THE LIFE TEST ROOM
In the right foreground are racks containing tests of XY Switches and control circuits for stability tests on XY toll ticketing recorders.

STROMBERG-CARLSON *transmitter*

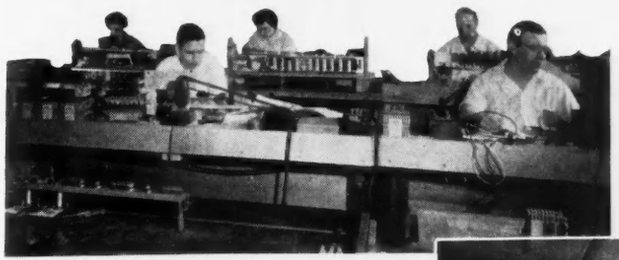
In order to avoid interference, three battery supplies are used: one providing power for life tests, a second for general switching development, and the third for transmission testing. All battery supplies are floated by constant voltage battery chargers that maintain terminal voltage with $\pm\frac{1}{2}$ of 1%.

The main room is divided into an office area, a component and circuit testing area, a systems area, and an assembly area. In the systems area, major switching system developments are set up complete for test purposes. The equipment for this and other laboratory activities is constructed in the assembly area. There is also a life test room, a sound absorbent room, a shop, and a storage room.

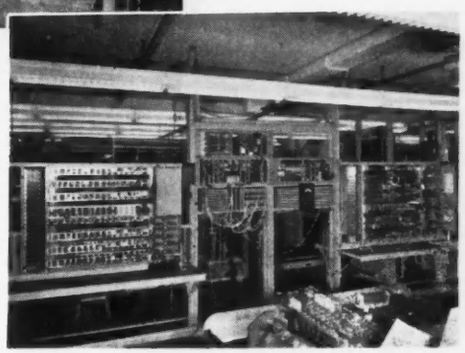
Thanks to a centrally located and very capably operated Instrument Laboratory, the Telephone Engineering Laboratory, in common with all other Stromberg-Carlson laboratories, enjoys the finest and latest designs of test equipment. The varied engineering activities of the Stromberg-Carlson Company necessitate a great diversity of instruments, all of which are available to each of the laboratories.



General view of the main room showing part of the office area and the component testing area.



Circuit testing shelves used in the development of new circuits.



The girls are engaged in engineering model assembly; the men, technical assistants, each has his own testing project.

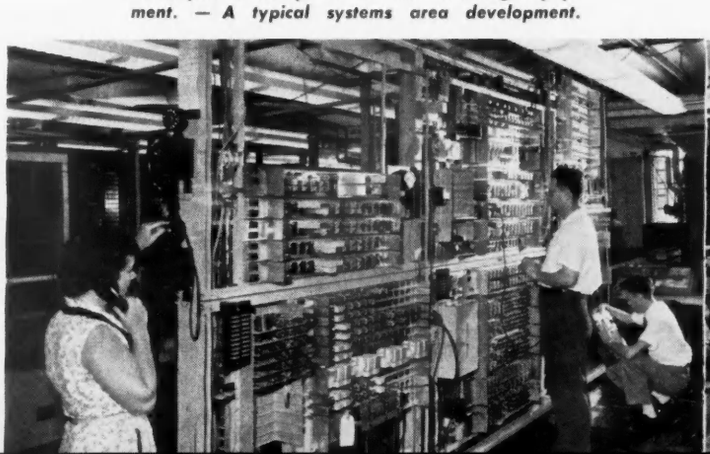
Responsibilities

This laboratory implements the development of new products by providing complete electrical test facilities and trained personnel for switching systems, circuit and component development. It is equipped to conduct life and stability tests wherein production samples and new or revised designs are operated under simulated field conditions and measurements are taken as the test progresses.

It conducts engineering quality control programs on various components in manufacture.

This laboratory also conducts a design approval program, wherein the first manufactured sample of new designs is examined and approved for manufacture in quantity. The XY Training School is a branch of the Telephone Engineering Laboratory.

In addition, engineering model assembly activities are carried out in the laboratory under the guidance of the Equipment Design engineers. The activities of the Telephone Engineering Laboratory are under the direction of Robert M. Seibert, Engineer-in-Charge. Group supervisors are Antons Melkis, who directs the circuit development and test activities, Eugene Shaffer, who handles component testing and George Killian, in charge of the XY Training School.



Development set-up of XY toll ticketing equipment. — A typical systems area development.

In the foreground is shown a portion of the test equipment assembly area.

STROMBERG-CARLSON *transmitter*

XY Dial System Installed at Farina, Illinois

P. W. Allen, manager of the Farina Mutual Telephone Co.

Louise Wilson, left, Farina Chief Operator; Evelyn Hollern, assistant Chief Operator of Illinois Bell at Centralia.

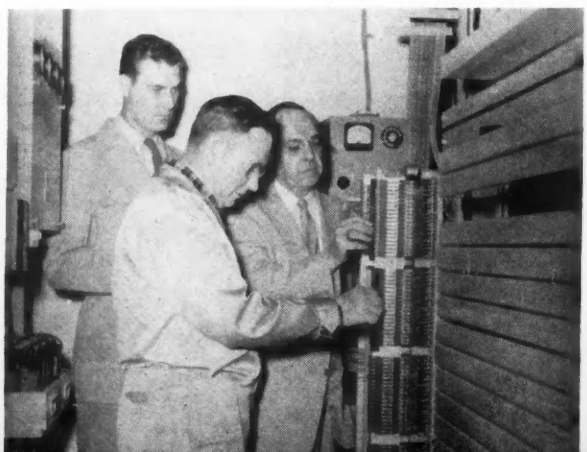
Mr. P. W. Allen reports 99 44/100% correct dialing of new numbers on cut-over night, when Farina, Ill. changed its telephone system to XY dial. While he and Mr. J. W. Green, Wire Chief, may be disturbed by the *one* line which didn't come in properly, citizens are 100% pleased with their new service and his untiring efforts to bring them the best in modern telephone equipment. The entire outside plant was rebuilt before conversion; the exchange, with approximately 250 lines now equipped, is engineered for the growth which inevitably follows modernization.

M. T. Bolluyt, Stromberg-Carlson Sales Representative shows Farina subscribers how the XY System works.

United Telephone Association Converts Three Kansas Exchanges to XY in Progressive Cut-over

In good time for the harvest of the 1954 wheat crop the United Telephone Association, rural telephone cooperative with headquarters in Dodge City, Kansas, extended dial telephone service over 350 miles of new line to its several hundred members.

Following in quick succession, Kingsdown, Spearville and Hanston were given XY dial systems; many who had waited long for this necessity in today's living are wondering how they ever managed without a telephone previously! The work completed at Kingsdown, Spearville and Hanston, the Association will now work in other areas to extend and improve service in the "nation's breadbasket."



Pulling picks at Hanston are (from left) Carl Brecheisen, manager of the United Telephone Association; Frank Salmans, of Jetmore; and Myles Woolley, Stromberg-Carlson sales engineer of the Kansas City office. At Spearville and Kingsdown, Norbett Tasset and Leo Eining, United Telephone Association boards members, made the conversion.

Ever Wonder How the Transmitter is Done?

Every now and then, some of America's great magazines take their readers behind scenes and show them the people, machines and systems which produce the publication.

The Stromberg-Carlson *Transmitter* is well into its third year. We thought our friends in the industry might enjoy a peek behind *our* scenes, to see some of the wheels that move to produce our monthly printed visit with you.

There is a basic "format" to which each issue more or less conforms. Certain standards of interest and variety are musts, since we feel that we can expect attention from readers only if our offering is in keeping with the excellent editorial content of Telephone Engineer magazine itself.

So there is almost always a technical engineering article of real newsworthiness — a "factory trip" explaining certain processes and controls which go into our products — stories on XY cut-overs of special interest to all companies with dial in their future — informal thumbnail sketches of Stromberg-Carlson personalities whom many readers never get to meet in person — and lots of lighter human-interest items like editor Forbes' recent series entitled "Postman's Holiday."

First things first — so any issue of the *Transmitter* starts with a huddle between engineering and advertising department members, with editor George Forbes as moderator and the company's advertising agency sitting in. General ideas are turned into specific writing assignments and the approximate length of each article is set. At the same time, illustrations are also planned. Often these involve photographs made hundreds of miles away, such as a cut-over, or within the various production departments of the factory itself.

The next step is delivery to the agency of rough material, composed of manuscript copy of all articles scheduled to appear and the approximate illustrations. Now comes a

rather complicated operation known in the printing trade as "casting." In brief, this means estimating exactly how much space each story will fill when it is set in type, how much area is available for cuts and whether the issue, when thus put together, will have a balanced, readable look to it. Believe us, we of the *Transmitter* staff who face this problem monthly, have a healthy respect for the newspaper publishers of America who have the same responsibility every single day!

Step three is known simply as Okays. *Transmitter* articles must, before publication, be satisfactory to Stromberg-Carlson's engineering, public relations and sales executives. That's a lot of minds and a lot of different viewpoints! The Personal Opinion Filters and Fast Approval Scanner, shown as items (b) and (k) in the cartoon (bottom of this page) are semi-humorous, semi-serious evidence that final approval of copy is a somewhat delayed achievement.

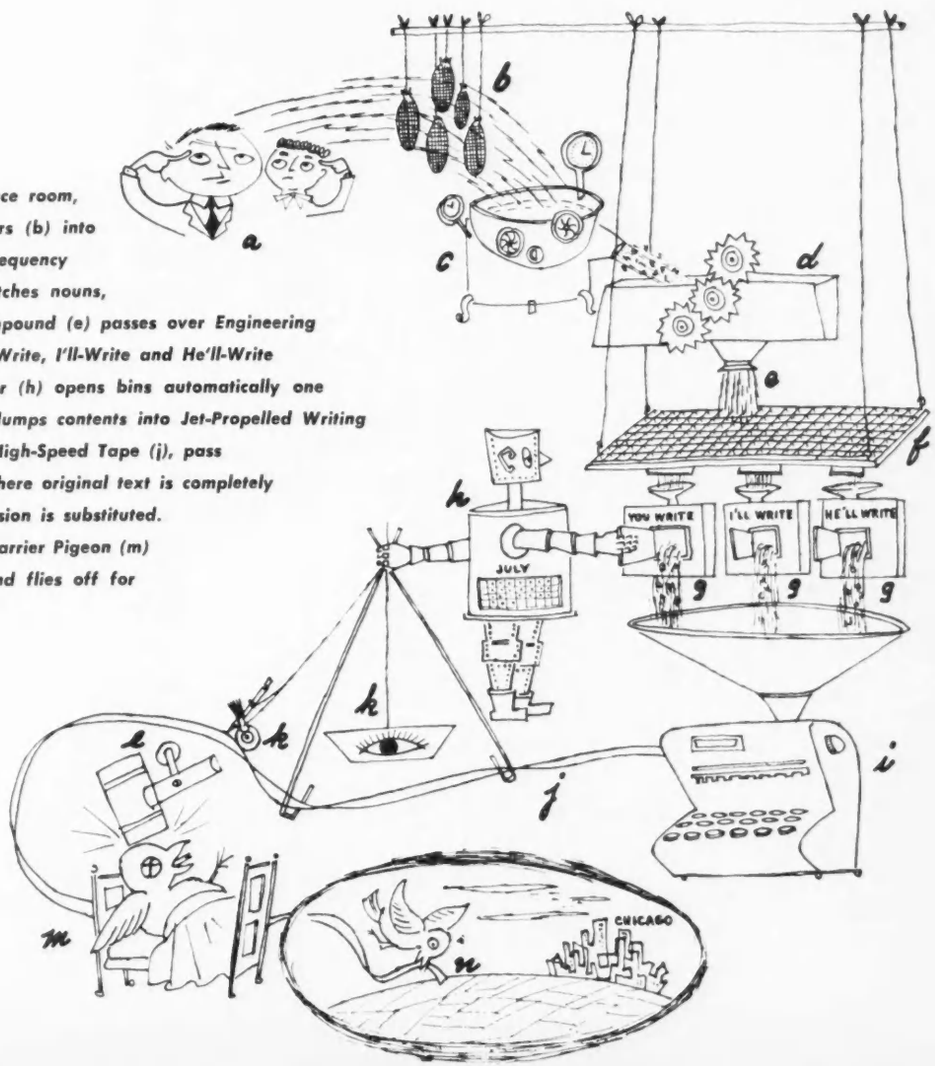
Copy *does* get done, however, to everyone's satisfaction and the rest of the task is quite routine. Layouts, text manuscripts and cuts are sent off to *Telephone Engineer's* printer and the next we see is a batch of page proofs. These also get thorough and critical scanning and, as the publishing world phrases it, the edition is finally "put to bed," printed and mailed out to you and all the magazine's subscribers.

And now, in conclusion, can we get *you* into our act?

Recently, an independent research organization made a thorough survey of several hundred readers of *Telephone Engineer & Management*. The results indicated that the Stromberg-Carlson *Transmitter* ranked very high in the contents of the magazine which most readers found most interesting.

We're pleased, naturally, but we have no intention of being complacent. Hence this request:

Please feel free to write to us and express your personal opinion of the *Transmitter*. Is its general content interesting and helpful? Is there any subject you'd like to see discussed which has not as yet been covered? Have we stepped on your or anyone else's toes? We'd like to hear from you.



Brain Waves (a), created in conference room, pass through Personal Opinion Filters (b) into Mixing Apparatus (c) where High-Frequency Word Agitator (d) automatically matches nouns, adjectives and verbs. Resulting Compound (e) passes over Engineering Sieves (f) and is separated into You-Write, I'll-Write and He'll-Write storage bins (g). Electronic Calendar (h) opens bins automatically one week before printing deadline and dumps contents into Jet-Propelled Writing Machine (i). Words are printed on High-Speed Tape (j), pass through Fast Approval Scanner (k) where original text is completely erased and Chief Editor's Second Version is substituted. Release Door (l) opens, awakening Carrier Pigeon (m) which grabs end of tape in beak and flies off for Printing Shop (n) in Chicago.

STROMBERG-CARLSON **transmitter**

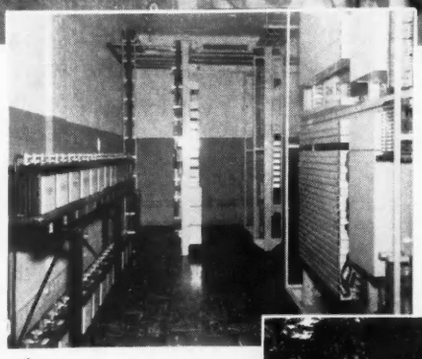
Northern Michigan Resort Area has Large XY Network

The Traverse Bays Telephone Company, Kenneth B. Sage manager, has converted eight former magneto exchanges to an integrated XY dial network. Free service is offered between all eight exchanges — a definite boon to subscribers. Special circuits allow testing any subscriber's line from Central Lake; also it is possible to apply the howler from there to any line in any exchange to help clear off-hook permanents.

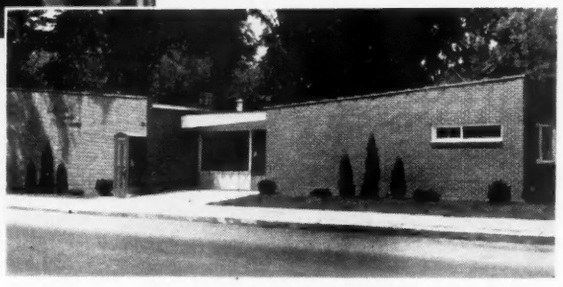
Central Lake, with its outstanding new exchange building, is the heart of this 1400 subscriber network; other exchanges are at Alden, Atwood, Bellaire, Clam River, Eastport, Ellsworth and Torch River. This Vacationist's Paradise, with its hundreds of miles of valuable shoreline on inter-connecting waterways has attracted a permanent summer population which expects and now has the best in telephone service.

Present at the cutover to XY dial were neighboring telephone company managers and representatives of the Michigan Public Service Commission and the Michigan Bell Telephone Company.

Left to Right — R. E. Hoffman, Stromberg-Carlson Sales Engineer; Kenneth B. Sage, manager, placing the first call over new XY System to Michigan's Governor Williams; J. R. Thompson, Stromberg-Carlson Sales Representative; Vern Hufford, Chief Telephone Engineer of Michigan Public Service Commission.



A portion of the XY equipment at Central Lake, Michigan.



Everyone is proud of Central Lake exchange building.

Father and Son Team at St. Jacob, Illinois

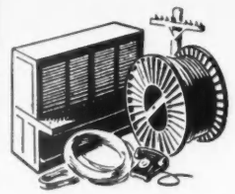
Father Roland, background, and son Richard make a good team at St. Jacob, Illinois. Richard is learning the ropes of dial central office maintenance. Currently attending the Stromberg-Carlson XY Training School (he is the youngest student to attend), he will eventually take over maintenance of the 120-line XY dial exchange.

Tool for Removing Dial Station Number Card

This simple and handy tool will save time and prevent damage in lifting off the station number card plastic covers so that corrected cards can be inserted. Press firmly until rubber suction cup has a good grip, then pull. It's easy and economical; order some today.

Published by Stromberg-Carlson . . . makers of Famous XY Equipment

"STROMBERG-CARLSON" AND "XY" ARE REGISTERED TRADE MARKS OF THE STROMBERG-CARLSON COMPANY, ROCHESTER, N. Y.



Advertisers' Index

Alphaduct Wire & Cable Co. 69
American Appraisal Co. 96
American Tel. & Tel. Co. 66-67
Ansonia Wire & Cable Co. 17
Armstrong Cork Co. 105
Automatic Electric Sales Corp. 7, 13, 60-61, 82, 91, 101

Bashlin Co., W. M. 108
Berry & Co., L. M. 2
Inside Front Cover
Buckeye Telephone & Supply Co. 65

Cable Spinning Equipment Co. 104
Calculagraph Co., Inc. 83
Chance Co., A. B. 18
Coffing Hoist Co. 103
Commercial Cord & Supply Co. 100
Communi-Catering 96
Cook Electric Co. 29
Copperweld Steel Co. 21
Cousino, Inc. 80

Davis Construction Co. 96
Donnelley & Sons, R. R. 65

Electric Storage Battery Co. 3
Ericsson Corp., The 78

General Electric Co., (Electronics) 19
General Electric Co. 31
General Insulated Wire Works 6
General Telephone Directory Co. 120
Back Cover
Gould National Batteries, Inc. 25
Graybar Electric Co. 5

Henkels & McCoy 96
Hill, Cyrus G. 96
Hubbard & Co. 20

Independent Telephone Repair Co. 107
Indiana Steel & Wire Co. 22
Insto-Gas Corp. 78
International Standard Elec. Co. 36
Irwin Auger Bit Co. 90

Kato Engineering Co. 80
Kaufman, H. J. 96
Kearney, James R., Corp. 95
Kellogg Switchboard & Supply Co. 32-33, 34-35, 92-93, 98-99
Kimble Glass Co. 108
King, W. T. 96

Klein & Sons, Mathias 86
Koiled Kords 94
Koppers Company 30

Leich Sales Corp. 54-55
Line Material Co. — A McGraw Electric Co. Div. 87
Loomis Advertising Co. 23
Lorain Products Corp. 119

Mahood, Edwin T. 96
Markwell Mfg. Co., Inc. 80
Mitchell, Jay G. 96

Natco Corp. 117
National Telephone Supply Co. 8
Neale Construction Co. 96
North Electric Mfg. Co. 14-15

Page & Hill, Inc. 105
Penn Line Service 96
Pittsburgh Coke & Chemical Co. 27
Porcelain Products 90

Raytheon Manufacturing Co. 28
Reliable Electric Co. 71
Roanwell Corp. 95
Roll-A-Reel 95
Runzel Cord & Wire Co. 90

Schauer Manufacturing Co. 100
Stromberg-Carlson Co. 40-41, 65, 84-85, 88-89, 109-116
Suttle Equipment Co. 94, 96

Taylor-Colquitt Co. 70
Tel. Answering & Recording Corp. 51
Tele-E-Lect Products, Inc. 80
Telephone & Power Supply Co. 96
Telephone Repair & Supply Co. 107
Telkor, Inc. 96

U. S. Independent Tel. Assoc. 47, 81
U. S. Steel, Amer. Steel & Wire 42
U. S. Steel, Coal & Chem. Div. 38
Utility Equipment Co. 96

Williams, Geo. E. 107
Williams Inspection Co., A. W. 96
Whitney Blake Co. 37

York-Hoover Corp. 26

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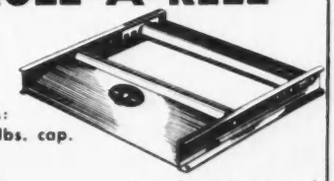

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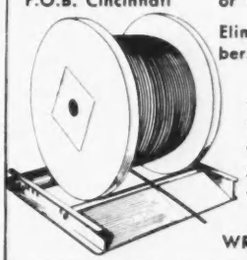

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The Back Of The Book

By JOHN G. REYNOLDS

Customer Relations

IN CHICAGO, preparation of the world's largest telephone directory was held up momentarily when a woman named Louise asked the telephone company to list her name as Louse. Called and queried, the customer said yes, her name was Louise—spelled L-o-u-s-e. "But L-o-u-s-e ordinarily spells louse," said a telephone employee, "Would it be all right if we put an 'I' in it—just so nobody will misunderstand?" The lady finally said yes, giving the story a happy ending.

Modern Kind

YOUNGSTERS often are the most avid listeners to the demonstrations at open houses or other public explanations of telephone equipment. One youngster was being particularly attentive as the telephone man told about microwaves — their speed and other amazing properties. Suddenly the boy asked:

"How long are they?"

"About as long as a cigarette," replied the telephone man. The youngster pondered a moment.

"Regular," he inquired, "or king size?"

TV Hazard

A BIRD THAT imitates a telephone bell is making it hard for a Chicago subscriber to watch television.

As soon as he gets comfortably planted in front of his television set, he hears his telephone ring. But the only response he can get is the operator's "Number, please?"

The subscriber was getting a trifle annoyed about the service before he discovered the truth. The telephone really isn't ringing at all. A woodpecker, sharpening his bill on the TV antenna, can duplicate the sound of the bell perfectly.

"3,000,000 *Words*"

THE ILLINOIS Bell Telephone Co. operator was asked by a foreign-speaking man to be connected with the "speaking clock." Immediately she connected the customer with CAthedral 8-8000, the "Time-of-Day" number . . . Another customer from across the sea wanted to know where he could find some Chinese food . . . .

These were a few of the unusual requests handled by telephone people during the World Council of Churches (WCC) convention which brought 1,600 delegates from 48 foreign countries, speaking 30 languages, into Evanston, Ill.

But telephone people took in stride telephone demands from many folks who never before saw a dial telephone, and others from far corners of the earth who couldn't understand why the average American could pick up a telephone and call most any place in the world.

When Disaster Strikes

RIGHT IN STEP with all the fine traditions established by telephone company employes, *Pekin, Ill.* operators of the *Middle States Telephone Co.* performed an excellent public service job during the recent disaster at American Distillery. Wasting no time, Middle State operators went to work to accommodate the deluge of extra calls and to notify surrounding areas of the need for help.

At the time of the explosion, six operators were on duty. They immediately called Peoria operators who helped notify tributaries of the urgent need for medical aid and supplies. By 10:50 p.m., 20 minutes after Rack house E exploded, 16 additional operators had arrived voluntarily at the telephone office to help in any way possible. Some of the operators left at 2:30 a.m. when the calls slacked somewhat, but six of the girls who stayed as extras worked 16 hours without rest.

During the first hour and one-half following the explosion 6,449 calls were recorded at the telephone office, while normally there would be approximately 6,000 less.

When the telephone power went out in the immediate disaster area, the company set up offices in the telephone office basement for the four industries. The distillery office was set up complete with two telephones in order, by 11:30 p.m. . . . Our Congratulations to Middle States for another fine example of why telephone people are such grand folks!

Trade-Mark Trouble

MA BELL, has been using its familiar "service mark" of a bell inside a circle for 32 years, and a predecessor company used it back to 1889. In 1946 Congress provided that such "service marks" might be registered and protected against imitation, like trade marks.

But Ma Bell did nothing about it. This omission was discovered by Raymond L. Smith, a Washington patent searcher, the New York Times says. The Smiths organized a telephone answering service, christened it "The Bell Answering System" and adapted and registered the familiar bell.

Then they offered their symbol to telephone answering services throughout the country. The buyers did all right, but those who lost out shrieked to high Heaven, and also to Ma Bell.

The Smiths finally got $18,000 to surrender their bell, with which they bought a nice new home in Fairfax County, Va., while Ma Bell applied for registration for her famous symbol.

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